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A METHOD OF SUTURE.

By **A. C. F. Halford, M.D., B.S. (Melb.),**
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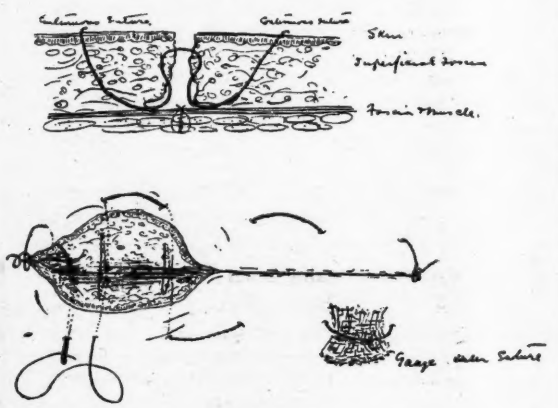
I am rather diffident about offering a suggestion on the subject of suturing skin wounds, as so many and varied are the methods already described in text-books. So much so that I am sure they must be bewildering to the beginner. I have been using my present method for some years and have found it a rapid and efficient method in the majority of operative wounds, where coaptation of the cut surfaces is readily obtained.

My object has been to devise a quick method of bringing the skin edges together without at any point constricting the cutis and at the same time obliterating all "dead" spaces. By allowing the skin edges just to fall together without pressure and without any superficial stitches, a very rapid and aseptic healing of wounds is obtained.

A method similar in some respects to mine (which I have not seen previously described) is illustrated by Edmunds in *The Lancet* (1918, I., 299). Edmunds' method is a combined deep and superficial suture; mine is all deep. The superficial suture is objectionable for many reasons.

The Method.

Pass a silkworm gut suture with a half-curved needle in the ordinary way at one end of the wound, fairly deep; tie and proceed with a continuous suture in the following way: Pass the needle 1.8 cm. from the commencing suture, 2.5 cm. from the line of incision, deeply to the fascia, and then continue the



needle parallel to the vertical cut surface to a point not less than 0.6 cm. from the skin, where a bite is taken in the superficial fascia and enter this structure at a corresponding point opposite, for the same purpose. Then pass the needle parallel again to the cut surface to the deep fascia; then turn the needle up, so that it points to and pierces the skin 2.5 cm. away from the incision; mattress 1.8 cm. to 2.5 cm. further up the line of wound, passing the needle into the skin once more 2.5 cm. from the line of incision. Continue in this way to the end of the wound and finish off the end. Use a large needle.

Generally one strand of catgut will close a wound 10 cm. long. If the wound be longer, a new length of gut may be tied to the end of the continuous suture. Make the next stitch before tying this knot, as it is then easier to place the knot conveniently and keep up proper tension. The tension should be just sufficient to secure complete apposition. Small pieces of gauze are placed under the mattress loops to prevent marking of the skin. The sutures may be left in eight days. Their removal is simple.

CHRONIC DISEASE AND ITS ASSOCIATION WITH FOCAL SEPSIS.

By **Sydney Pern, M.R.C.S. (Lond.), L.R.C.P. (Eng.),**
Acting Honorary Physician to Out-Patients, Melbourne Hospital.

Being struck with the large number of cases presenting focal infections which one comes across in one's work, I thought it would be of interest to make some statistics of my last eighteen months' work at the Melbourne Hospital Medical Out-Patient Department.

Owing to the stress of work, due to so many men being at the front and lack of assistance, good detail in recording of notes had to be more or less sacrificed to actual attending to patients, so on the whole the recorded incidence of focal infections must be below the true number.

During this period when I was in medical charge, working two clinics, 989 patients came under my care. Of these, 578 were noted to have some kind of focal infection.

In order to classify such cases as might mainly or possibly be influenced in their course by the presence of these focal infections, they were grouped together under the following headings:—

Arthritic, cardiac, pulmonary, including bronchitis and alveolar infections, thyrotoxic cases, showing symptoms without goître, goître, gastric and various forms of ill health.

In arranging these groups a broad basis of classification was considered advisable:—

(*i.*) Arthritic cases included any condition of joints ranging from rheumatic pains without structural changes to gross pathological conditions.

(*ii.*) Cardiac cases included valvular lesions, any myocardial degeneration or spoiling, auricular fibrillation and *angina pectoris*, as well as cases of myocardial irritability, such as extra systoles.

(*iii.*) Pulmonary cases included bronchitis of long standing and often associated with asthma, alveolitis showing infection of pulmonary tissue, in itself often suggesting tubercular involvement. After repeated

failures to find the tubercle bacilli and no marked von Pirquet reaction, I was compelled to consider some other organism as the causitive factor.

(*iv.*) Goître cases included any obvious thyroid enlargement.

(*v.*) Thyro-toxic cases were taken to denote those showing symptoms of an over-active thyroid with no enlargement, the toxic syndrome being depicted by nervousness, tremor and tachycardia.

(*vi.*) Gastric cases embraced gastric and duodenal ulcer or any gross gastric disturbance.

(*vii.*) Ill-health included cases other than those categorically mentioned.

The focal infections are classed under the following heading: dental, nasal, tonsillar, gonorrhœal, prostatic, middle ear.

Seeing that the age incidence might be of certain interest in arthritic, cardiac and pulmonary lesions, the classification has been made into males and females over and under 30 years of age. The other cases were classified into males and females.

(*a*) Dental infection included any infection of gums or abscess at the root, apex or tooth socket.

(*b*) Tonsillar infection was taken to mean tonsils from which infected material could be pressed, regardless of how small the focus.

(*c*) Nasal infection included infection of all nasal accessory sinuses or such gross nasal deformity as to prevent efficient drainage of sinuses.

Of the 989 patients 125 presented arthritic lesion and only 8 of these failed to show some focal infection. In these one has to remember syphilis, tuberculosis and possible focal infections which have vanished after doing their damage, such as in individuals having lost their teeth as a result of pyorrhœa, tonsils which have eventually become atrophic and sinuses which have subsided in the course of time. Whilst it is gradually being accepted that joint involvements are or can be due to septic foci, we must not lose sight of the fact that other tissues of the body may also be involved from the same sources, either directly by infective organisms or by their toxins. There are two statements which must be admitted to be true. The first is that all body tissues can be infected by bacteria or damaged by their toxins. The second is that, apart from bacteria, protozoa, spirochætes and their toxins, vitamine deficiencies, shock, injury, foreign proteins, such as in alkaloids, mineral poisons and neoplasms, there is very little else which can cause harm to the body cells. There are two methods by which bacteria gain entrance to the blood stream. One is a casual infection through the skin, conjunctiva, or mucous membrane, or any of the entrances or exits of the body; the other is a more or less constant one, from a focus of infection which is present over a long period of time. As it is recognized that bacteria do not thrive, as a rule, in the blood stream, it becomes a matter of great importance to ascertain whether there is a condition which can constantly supply bacteria to it, or one in which the blood gets only a casual invasion. Nature has provided us with an immunity mechanism to help in dealing with these infections, but, like all mechanisms, there is a limit to its possibilities and sooner or later it breaks down, thus enabling bacteria to gain fresh ground. This occurs more rapidly in some people than in others.

The arthritic cases are here tabulated under their different focal infections:—

Arthritic Cases.

	Dental.	Nasal.	Tonsillar.	Dental. and Tonsillar.	Dental and Nasal.	Tonsillar and Nasal.	Dental. Tonsillar and Nasal.	Gonorrhœal.	Prostatic.	Ear.	No Focal Origin Noted.	Total.
Males—												
Under Thirty	3	1	4	1	—	3	—	1	—	—	1	14
Over Thirty	21	3	4	—	—	2	—	3	1	1	3	38
Females—												
Under Thirty	4	1	6	—	—	—	—	1	—	—	1	13
Over Thirty	36	6	6	3	2	2	—	2	—	—	3	60
	—	—	—	—	—	—	—	—	—	—	—	—
	64	11	20	4	2	7	—	7	1	1	8	125
	—	—	—	—	—	—	—	—	—	—	—	—

In looking at the figures of joint involvements one finds that dental infections predominate and, as would be expected, males and females over 30 years head the list. Tonsillar infections come next, with equal incidence of age. As bacteria do not necessarily confine their attentions to one organ or group, such as joints, one would expect to find some associated conditions, thus under each heading the associated conditions of these cases are recorded together with the focal infections:—

Associated Conditions in Arthritic Cases.

Males—
Under 30—Cardiac: 1 tonsillar
Over 30—Cardiac: 2 nasal and no infection noted
Renal calculus: 1 dental
Anæmia: 1 dental

Females—
Under 30—Nil
Over 30—Cardiac

When once organisms gain entrance to the blood stream or lymphatic system, one would naturally be inclined to expect them to lodge in any organ or tissue of the body, as is seen in general pyæmia. Clinically we find there is a tendency to group in one type of tissues at a time. Take for instance rheumatoid arthritis, where most of the organisms are attracted to the joints and often leave the other tissues alone.

In many cases after the removal of the focus of infection improvement results, but with a recrudescent of the primary focus, the old trouble again flares up. This seems to point to the fact that it is necessary for fresh organisms to emerge from the primary focus and the exacerbations are not due to those already in the joints and tissues. In other words a chronic condition seems dependent upon a fresh supply of organisms, which tend to be attracted to those specific tissues already involved, being constantly supplied. Valvular lesions, also, if freed from the chances of further infection, tend to heal in the same way.

(1) Much light has been thrown upon the matter

by the work of Rosenow, Billings and Schottmüller, who isolated a pure culture of the streptococcus from the blood during the life of patients. This organism grew in fine colonies on blood agar plates, was non-hæmolyzing, but produced a greenish halo around the colonies. This *Streptococcus viridans* was isolated from 11 patients and cultivated in various media; animals were inoculated with successive strains. The behaviour of the strains obtained from all patients was the same. The end result was a pneumococcus of specific pathogenicity for animals in the production of pneumococcæmia and pneumonia.

Later Rosenow has apparently confirmed the transmutability of the members of the streptococcus group and the property of transmutation is reversible within the members of this family. He says:—

> From this study the apparent position of the various members of the streptococcic group may be illustrated by the position of the fingers in a partially flexed hand, in which the hemolytic streptococcus occupies the position of the little finger, the pneumococcus the place of the index finger (the opposite extreme), *Streptococcus viridans* (representing the group of more or less saprophytic, non-hemolyzing streptococci) the middle finger, the streptococci from rheumatism the ring finger, the *Streptococcus mucosus*, having some of the properties of both pneumonococci and streptococci, the thumb. In this grouping there is in general an increase in parasitism and virulence as we approach the thumb (*Streptococcus mucosus*).

It thus appears that the streptococcus has powers of transmutability and in its different forms is able to produce different kinds of lesions. Still that does not altogether clear up the difficulty as to the reason why in some cases joints may be affected, in others the heart and in others the kidneys may be affected, with apparently the same strain of streptococcus.

(2) The varying virulence of faculative pathogenic bacteria has been long recognized. Environment seems to play an important rôle. Not only may there be a variation in general virulence, but apparently a special pathogenic virulence for certain tissues may be acquired.

Forssner has noted the acquirement of a relative specific tissue affinity by a strain of streptococci.

By culture in kidney and kidney extract the ordinary *Streptococcus pyogenes* (*hæmolysans*), which had no pathogenic elective affinity for kidney, was converted into a strain which, injected intravenously into animals, constantly produced definite anatomical lesions of the kidney.

To prove this specific elective tissue affinity an enormous number of animal experiments were done by Rosenow.

> Fourteen strains from appendicitis produced lesions in the appendix in 68% of 68 rabbits injected, which is in marked contrast to an average of only 5% of lesions in the appendix in the animals injected with strains and isolated from sources other than appendicitis. Eighteen strains from ulcer of the stomach or duodenum produced hæmorrhages in 60% and ulcer of stomach or duodenum in 60%, a combined total of 70% of the 103 animals injected, in contrast to an average of 20% hæmorrhages and 9% ulcer following injection of other strains. Twelve strains from cholecystitis produced lesions in the gall bladders in 80% of the 41 animals injected, in contrast to 10% with other strains.
>
> Twenty-four strains from rheumatic fever produced arthritis in 66%, endocarditis in 46%, pericarditis in 27% and myocarditis in 44% of the 71 animals injected in contrast to an average of arthritis in 27%, endocardial lesions in 14%, pericarditis in 2% and myocarditis in 10% of the animals injected with strains from sources other than rheumatic fever.—Billings.

Many other instances of this specific elective affinity are given, such as herpes, chorea, pancreatitis, *erythema nodosum*, spinal myelitis and irido-cyclitis. These experiments will largely help to clear up the question why a certain organ or group should be picked out and why many members of one family are sometimes seen with cardiac lesions or rheumatoid arthritis, all being probably infected from the same organism with a specific elective affinity for joints or valves.

Applying the same tables to cardiac cases one finds:

Cardiac.

	Dental.	Nasal.	Tonsillar.	Dental and Tonsillar.	Dental and Nasal.	Tonsillar and Nasal.	Dental, Tonsillar and Nasal.	Gonorrhœal.	Typhoid.	Syphilitic.	Mastoid.	No cause Recorded.	Total.
Males—													
Under 30	2	1	18	—	—	1	—	—	1	—	—	3	26
Over 30	26	2	—	2	1	—	—	—	—	2	—	17	50
Females—													
Under 30	4	3	17	3	—	4	—	—	—	—	1	2	34
Over 30	26	6	6	3	1	1	—	1	—	1	—	31	76
	58	12	41	8	2	6	—	1	1	3	1	53	186

Dental lesions of males and females over 30 predominate, whereas in males and females under 30 tonsillar infections predominate. These two combined represent 50% of the total cardiac lesions seen. Of these 186 cases 157 presented valvular lesions, 98 in females and 59 in males. Other cardiac conditions numbered 29, 9 in females and 20 in males, the figures being:—

	Valvular.						Myocardial.					
	Dental.	Tonsillar.	Nasal.	Other Causes.	No.	Total.	Dental.	Tonsillar.	Nasal.	Other Causes.	No.	Total.
Females	26	29	8	5	30	98	4	1	0	0	4	9
Males	23	18	1	3	14	59	3	2	0	2	13	20
	49	47	9	8	44	157	7	3	0	2	17	29

As in arthritic cases, so in cardiac cases another large number of associated conditions is found, showing that the specific elective affinity is not absolute. The pulmonary conditions are divided into chronic bronchitis and alveolitis.

Chronic Bronchitis.

	Dental.	Nasal.	Tonsillar.	Dental and Tonsillar.	Dental and Nasal.	Tonsillar and Nasal.	Dental, Tonsillar and Nasal.	No Cause.	Total.
Males—									
Under 30	1	4	—	—	—	—	—	—	5
Over 30	4	12	2	—	2	1	—	1	22
Females—									
Under 30	—	3	1	—	—	—	—	—	4
Over 30	4	6	1	—	1	—	1	1	14
	—	—	—	—	—	—	—	—	—
	9	25	4	—	3	1	1	2	45
	—	—	—	—	—	—	—	—	—

Here again nasal infections predominate, being 9 out of 17, or roughly 50%. It might be again mentioned that these were cases in which no tubercle bacilli could be found over various trials and which showed no marked von Pirquet reaction.

In looking through the goître table one is struck by the number of tonsillar infections in females. There were 50 out of a total of 67 or 74%. It is usual that goître predominates in females.

Alveolitis.

	Dental.	Nasal.	Tonsillar.	Dental and Tonsillar.	Dental and Nasal.	Tonsillar and Nasal.	Total.
Males	1	2	1	—	1	—	5
Females	2	5	2	2	—	1	12
	—	—	—	—	—	—	—
	3	7	3	2	1	1	17
	—	—	—	—	—	—	—

The most striking thing here, as one would naturally expect, is the number of nasal infections being 30 out of a total of 45 or 66%.

Goître.

	Dental.	Nasal.	Tonsillar.	Dental and Tonsillar.	Dental and Nasal.	Tonsillar and Nasal.	Total.
Males	—	—	4	—	—	1	5
Females	8	7	28	7	2	10	62
	—	—	—	—	—	—	—
	8	7	32	7	2	11	67
	—	—	—	—	—	—	—

Thyrotoxic Cases.

	Dental.	Nasal.	Tonsillar.	Dental and Tonsillar.	Dental and Nasal.	Tonsillar and Nasal.	Dental, Tonsillar and Nasal.	Total.
Males	1	5	4	1	2	1	—	14
Females	7	9	10	3	1	8	1	39
	—	—	—	—	—	—	—	—
	8	14	14	4	3	9	1	53
	—	—	—	—	—	—	—	—

Females with tonsillar infection make up the largest number in this series.

These figures and the recent work done by Billings, Rosenow and others should lead us to look upon any focal infection, however small, as potent for serious evil and to be systematically eradicated where possible. It should also cause us to look in that direction for the causes of certain diseases and degenerative changes, the origin of which at the present time is obscure.

Gastric Cases.

	Dental.	Nasal.	Tonsillar.	Unknown.	Total.
Males	10	1	2	1	14
Females	6	3	3	—	12
	—	—	—	—	—
	16	4	5	1	26
	—	—	—	—	—

Dental sepsis accounted for 65% of cases, males slightly predominating.

Of the remaining 103 cases showing septic foci are cases of epilepsy, diabetes, pyelitis, cholecystitis, dyspepsia, pleurisy (non-tubercular), gall stones, neuralgia, hyperpiesis, pernicious anæmia, chronic enteritis, cystitis, chronic nephritis, sciatica, lumbago, chorea, neuritis, non-specific paraplegia and hemiplegia, *paralysis agitans*, anæmia and appendicitis. How far these may be caused or influenced by focal infection must be left to a future paper and further investigations made.

The most striking point in this series of 989 cases is the extraordinary number presenting some form of focal infection, being 58% of the total. This is below the actual number, as focal infections were not systematically searched for in all cases.

References.

(1) Billings: "Focal Infections," p. 27.
(2) Billings: "Focal Infections," p. 32.
(3) Billings: "Focal Infections," p. 39.

SOME INTERESTING INSTANCES OF TUBERCULOSIS IN ANIMALS.

By **J. Burton Cleland, M.D., Ch.M. (Syd.),**
(From the Microbiological Laboratory, Department of Public Health, Sydney.)

1.—Tubercular Meningitis in a Malayan Bear.

In November, 1918, a Malayan bear died in the Zoological Gardens, Sydney. At the post-mortem examination there seemed to be some enlargement of the thymus gland; the left lung showed a thickened pleura with some adhesions and was apparently collapsed in part. In the lower part of the left pleural cavity was a small, pedunculated, flattened, fibrous growth. The liver was rather pale, but the heart, spleen, kidneys and intestine were normal. On removing the skull cap, an excess of slightly turbid fluid escaped. The brain was congested and there was thickening of the *pia mater* with numerous small tubercles at the base of the brain and over the medulla. Smears showed the presence of very numerous tubercle bacilli. Histologically the thymus gland was seen to have undergone degeneration, but there were no giant cells. The pedunculated body in the pleura was partly fibrosed and partly consisted of degenerated cells, but contained no giant cells. In parts of these sections numerous long, irregular tubercle bacilli were seen, chiefly in groups of degenerated cells. These appearances somewhat resembled the "globi" found in leprosy. Sections of the base of the brain and spinal cord showed an extensive exudate, partly cellular and partly fibrinous. In places lymphocytes surrounded the vessels and in the cord these accompanied one vessel a short way into the substance. Numerous tubercle bacilli were present, many in groups in polymorpho-nuclear cells.

2.—Tuberculomata in a Dog.

The animal was a bulldog, which died in Sydney in October, 1917. At the post-mortem examination the lungs showed some small, indefinite miliary bodies. Attached to the liver was a whitish growth, somewhat nodular in shape and about the size of a flattened walnut, with a degenerated centre becoming a cavity. The liver itself contained scattered small growths of half the size of peas, with caseous centres. In the spleen were projecting, rounded, dark-coloured areas half the size of split peas and on the surface a thickish, warty-looking capsule. A gland, mediastinal or mesenteric, the size of an almond, was white and suggested a malignant growth in appearance. In the kidneys were seen small scattered white specks on the surface and all through their substance. Histological examination of the liver revealed in the large mass an extensive degenerated area and round this elongated cells and numerous plasma cells. There were also a number of small foci scattered through the liver composed of a loose tissue, apparently of sustentacular cells, scattered through which were round, polymorpho-nuclear and small plasma cells. The kidneys contained similar foci, often large and enlongated, and in one small area a number of polymorpho-nuclear cells. The spleen had a thickened dense capsule and a projecting nodule on the surface, obscured by hæmorrhages. There were numerous small areas in the lungs, as in the liver, several including some areas of necrosis. The lymph gland contained a large caseous area.

Tubercle bacilli were detected in sections in the degenerated areas in the liver and the lymph gland. The interesting feature in this case is that the growths had the histological structure of granulomata with caseated areas, but did not contain any giant cells. As stress is often laid on the presence of giant cells as being almost a necessity in tubercular conditions, appearances, such as those presented by this dog, might easily fail to be recognized as tubercular.

A CASE OF MALIGNANT (CARCINOMATOUS) PERICARDITIS.

By **J. Burton Cleland, M.D.,**
Microbiological Laboratory, Department of Public Health, Sydney,
and
Arthur Palmer, M.B., F.R.C.S.,
First Government Medical Officer, Sydney.

At a clinical meeting of the New South Wales Branch of the British Medical Association held at the Medical School on November 8, 1919 (*The Medical Journal of Australia*, December 7, 1919, p. 478), Professor Welsh referred *inter alia* to the occurrence of a form of chronic tubercular pericarditis which he thought was frequently overlooked. One of us (A.A.P.) was specially interested in his remarks and determined to submit for microscopical examination pericardium material from any case that might possibly be of this nature. This opportunity occurred six days later, on November 14, at a post-mortem examination undertaken on behalf of the Coroner. The specimen was submitted to the laboratory. On macroscopical examination the surface of the heart showed a slight fibrous pericarditis, whilst in the neighbourhood of the auricles were discrete, minute, nodular projections. On section the pericardial surface of the heart showed here and there narrow, whitish, pencil-like thickenings. To our surprise, when microscopical sections were cut, we found amongst granulation tissue in places an extensive infiltration by deposits of carcinoma cells in a reticulum.

It appears that this patient, a man, aged 49 years, was found dead in bed. Subsequent inquiry from his wife showed that he had had a swelling behind the right angle of his jaw, which had caused him a good deal of pain, but for which he had not consulted any doctor. At the post-mortem examination, a hard swelling was noticed in the region of the right parotid gland. It was not further examined. The pericardial sac was distended, with a large quantity of blood-stained fluid, a chronic pericarditis being present. The left lung was adherent throughout. The gastric veins were prominent, the liver had the appearance of nutmeg and the kidneys showed advanced chronic interstitial nephritis. Death was attributed to chronic interstitial nephritis and chronic pericarditis. The result of the post-mortem examination did not reveal any clear macroscopical evidence of tuberculosis, though the chronic pericarditis to the naked eye resembled the tubercular type mentioned by Professor Welsh. The malignant cells present suggested an

origin from a squamous epithelioma and it seems highly probable that the swelling near the jaw represented a deposit from such a squamous epithelioma, originating in the floor of the mouth or the tongue.

It is a remarkable coincidence that Professor Welsh's demonstration of chronic tubercular pericarditis should have led so soon to the recognition of another and exceedingly rare form of pericarditis, namely, that due to a carcinomatous deposit presumably derived from a squamous epithelioma in the oral cavity.

Reports of Cases.

A CASE OF JUGULAR PHLEBITIS, SINUS THROMBOSIS, ULCERATIVE ENDOCARDITIS.

By **W. Spalding Laurie, M.D., B.S.,**
Assistant Physician, Alfred Hospital, Melbourne.

The following case is worthy of record owing to its unusual features and rapidly fatal ending, the acuteness of the initial symptoms with almost total absence of physical signs and the apparently complete recovery until the onset of the fatal complications.

M.F.C., *æt.* 27, consulted me on the evening of December 24, 1919, on her way home from business. She complained of feeling "all out," slight pains in the back and limbs and more severe pain in the right side of the neck, where there was ill-defined swelling about the sterno-mastoid, very tender to touch. The temperature was 40° C.. The tonsils were somewhat large and spongy, but there were no signs of acute inflammation. There was no earache, nor had the patient ever had any aural discharge. The patient was sent home to bed. Next morning the pain in the neck was more severe; there was intense headache, but no vomiting and no physical signs beyond the extreme tenderness of the right side of the neck. The temperature was 38.8° C..

On December 26 the patient was much easier, but a generalized *erythema nodosum* occurred on the trunk and limbs associated with a dry sore throat. She was given sodium salicylate and the sore throat cleared up in a few days; the patient seemed well except for some lack of energy and anæmia.

On January 12, 1920, there occurred some œdema of both feet. Examination showed normal heart sounds; the œdema was attributed to the anæmia and use of the limbs after her illness.

On January 28 I was again called to see her. The pain in the right side of the neck had returned without swelling, but with extreme tenderness on pressure. There were also pains radiating up the right side of the head and behind the eyes.

On the 29th this pain was intense, accompanied by photophobia and twitching of the right side of the face and right arm; she vomited two or three times. The pain was relieved by phenacetin and she passed a good night. On January 30 at 9.30 a.m. she seemed fairly comfortable, her only complaint being pain behind the right eye. Her temperature was 37.8° C.. A 2 p.m. I was again sent for. She had got out of bed and had fainted. I found her with intense pain again in the right side of her head and very emotional, clinging to those around her in evident fear of some impending calamity. She complained also that her sight was going. I detected a very slight systolic bruit at the apex, which I attributed to the faint. At 7 p.m. she was much worse, quite delirious and moaning almost constantly. The cardiac bruit was more marked and harsher in character. In consultation a few hours later it was considered that surgical intervention was quite hopeless and, owing to the acuteness and rapid progress, any attempt at vaccine or serum treatment seemed useless. The patient rapidly passed into a condition of semi-consciousness, rousing sufficiently to ask for a drink, but moaning constantly and failing to recognize anyone who came near her. Attempts to move her, and particularly to flex her neck, elicted a loud scream. Her knee jerks were extremely active, but there was no ankle clonus and her plantar reflexes were flexor in type. The heart action became very rapid, tumultuous and irregular and she died at 6 p.m. on February 4.

The diagnosis made was phlebitis of the jugular vein and of the lateral sinus, with sinus thrombosis and secondary ulcerative endocarditis. The source of the infection was possibly the tonsils. There was at no time any mastoid tenderness or other sign of otitis. Had we recognized more clearly the nature of the condition at the end of December, it is possible that vaccine from tonsillar cultures might have proved useful. The unusual character of the symptoms and the outbreak of erythema should have led us to regard the condition as serious, but the rapid response to salicylate and apparently complete subsidence of all symptoms were most misleading.

CÆSARIAN SECTION FOR CONTRACTION RING.

By **G. A. Hagenauer, M.B., B.S. (Melb.),**
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Mrs. W., *æt.* 24 years, was brought to me from the country to a nursing home at 2 a.m. on October 24, 1919. She was in labour in her second pregnancy.

She was seen at 5 a.m., four hours after the labour pains had begun. The *os* was fully dilated; the head was presenting and was descending with each pain. A child was born a half of an hour later. It weighed 2,950 grammes.

On placing my hand over the abdomen to assist the contraction of the uterus, I found that there was a second child still in the uterus. Everything pointed to a rapid and easy delivery; the fœtus was presenting by the vertex and the pains were coming on frequently. As no advance was made, forceps were applied under chloroform anæsthesia. It was found, however, that it was impossible to deliver the child. On making an examination I was surprised to find that the uterus had contracted tightly in the form of a ring around the child's neck. This prevented the delivery of the shoulder. The constriction appeared to be situated at the level of the internal *os*. It was quite impossible to pass a finger, much less the whole hand, through this ring into the uterine cavity. Not having met with a similar case, I must admit that it took me a few minutes to collect my thoughts and to decide what should be done. Version was out of the question. Craniotomy would have been worse than useless. Cæsarian section appeared to be the only thing to be done.

The patient was therefore given 0.015 grm. of morphine and was removed to a hospital, where Cæsarian section was performed two hours later.

When the patient was on the operation table, before the abdomen was opened, a further attempt was made under full anæsthesia to deliver with forceps, but without success. Vaginal examination showed that no relaxation whatever had taken place of the contraction ring. When the abdomen was opened, the site of the contraction ring was plainly visible, as a depression at the lower part of the uterus. The incision into the uterus was made vertically. It was over the placental site. This has happened to me in three successive cases. It would seem as if the attachment of the placenta to the anterior wall occurs more frequently than is taught to be the case.

The placenta was quickly separated and it required a considerable amount of traction to draw the after-coming head through the obstructing ring. The child, of course, was dead. The uterine wall was sutured in layers with catgut, the suturing of the mucous coat took longer than usual, owing to the placental site being involved.

This case is a most interesting and instructive one. The contraction ring occurred after the normal birth of the first child. It is difficult to find an explanation for this occurrence in the absence of a prolonged labour and the employment of a drug such as ergot or pituitrin. I had expected that relaxation would have taken place after morphine and the anæsthetic.

It would, perhaps have been better surgery to have performed hysterectomy, on account of the attempts to deliver by forceps and the repeated vaginal examinations, which undoubtedly increased the risk of sepsis. It would in addition have been a simpler procedure and would have taken less time to carry out than suturing the uterine wound in layers, especially over the placental site.

Reviews.

ORAL HYGIENE IN CHILDHOOD.

A note of warning is sounded to physiologists by Dr. J. Sim Wallace in his book, entitled "Child Welfare,"[1] not to accept blindly what previous physiologists have taught for decades, but to pause and think of the use of saliva and mucin in the mouth. Dr. Wallace holds that the usually taught functions of these important secretions, to digest starch and lubricate the bolus of food, need to be considerably amplified. The use of saliva for oral hygiene is the main theme throughout Dr. Wallace's collection of five previously published papers, which he now issues in book form. He points out that, not only is saliva poured out when food is taken into the mouth from without, but also that in vomiting saliva is once more freely secreted, so as to expel the food as completely as possible from the mouth. The protective use of mucus in the hygiene of the mouth, by causing a slippery surface on the teeth and gums, prevents to a large extent the undue lodgement of food particles and allows the saliva to float them easily off the teeth. In short, the author expounds the thesis that the chief function of saliva is to clean the mouth and not to digest starch.

Oral hygiene and the prevention of dental caries may be looked upon as one of the leading planks in the child welfare campaign, for no other human ill is more fraught with evil consequences than this national scourge of dental caries.

Dr. Wallace condemns in no uncertain language the almost universal practice of feeding pappy foods to children after they have cut their incisor teeth and pædiatricians have as much reason to review their methods as the physiologists, after reading this little book. They should throw their weight into the task of trying to preserve a proper oral hygiene by advising, after weaning, food that will keep the mouth in a healthy state and the teeth free from decay.

Bread, toast and rusk not soaked in milk give the teeth, gums and tongue, as well as the muscles of the jaw, work that nature intended them to perform and such work Dr. Wallace suggests may be initiated from the age of nine months. Diet lists for children of seventeen months and at two and a half years up to six years are given and great stress is laid on the value of fruit juices at the end of each meal, to help to remove all particles of food, by flooding the mouth by saliva.

There is no doubt that much of the advice contained in this small book is of practical value. If it received general recognition amongst those in charge of welfare work in all its branches much good would be effected. It certainly behoves all nurses connected with baby welfare centres, medical men associated with children's work, medical inspectors of schools and school dentists to study the lessons taught by Dr. Wallace in this publication.

QUESTIONS AND ANSWERS IN OPHTHALMOLOGY.

The objections common to all vest-pocket publications on medical subjects apply with equal, if not greater, force to those on diseases of the eye. It is inconceivable that any student could learn his ophthalmology from these condensed pages, unrelieved by picture, illustration or diagram. Having made these disparaging remarks, it is a relief to the reviewer to congratulate sincerely the promoters of the Catechism Series on getting Dr. W. G. Sym to compile his little work.[1] It is a gem of its kind; as might be expected from Edinburgh, its matter is pre-eminently sane and sound and free from dulness. The formal answer to the formal question serves a useful purpose in crystallizing our ideas on many points; for example, the reply to the question on page 19 on conjunctivitis: "What special features are found in connexion with the presence of particular organisms?" and that on page 51, in answer to the question: "What, then, is the connecting link between the two forms of glaucoma?" In the treatment of divergent strabismus tenotomy of the external rectus is too summarily dismissed as valueless, but a good point is introduced on eye injuries, where the surgeon is advised to estimate at once the vision of the uninjured eye, in view of later claims for compensation. As a note-book of salient points, culled from clinical and oral teaching, or from a text-book of wider scope, this brochure makes an excellent model; no doubt the author regards it in this light.

[1] Child Welfare and the Teachings of Certain Dentists, School Medical Officers, Medical Officers of Health and Other Medical Men, by J. Sim Wallace, D.Sc., M.D., L.D.S.; 1919. London: Baillière, Tindall & Cox; Demy 8vo., pp. 102. Price, 5s. net.

[1] Catechism Series: Diseases of the Eye, by William George Sym, M.D., F.R.C.S.E.; 1919. Edinburgh: E. & S. Livingstone; Crown 8vo., pp. 67. Price, 1s. 6d. net.

Naval and Military.

APPOINTMENTS.

The following appointments, etc., have been published in the *Commonwealth of Australia Gazette*, No. 25, of March 4, 1920:—

Australian Imperial Force.

First Military District.

Captain C. Anderson, M.C., Australian Army Medical Corps, is granted the honorary rank of Major, 26th May, 1919.

Second Military District.

Lieutenant-Colonel A. L. Buchanan, Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 868, promulgated on page 2469 of *Commonwealth of Australia Gazette* No. 138/19, is cancelled.

Captain H. G. Humphries, Australian Army Medical Corps, to officate as Deputy Assistant Director Medical Services, Australian Mounted Division, 1st June, 1919, *vice* Captain (Honorary Major) C. Anderson, M.C., A.A.M.C., who relinquished on 28th May, 1919.

Captain H. G. Humphries, Australian Army Medical Corps, ceased to officate as Deputy Assistant Director Medical Services, Australian Mounted Division, 26th July, 1919.

Lieutenant-Colonel (Temporary Colonel) W. L. Kirkwood, O.B.E., Australian Army Medical Corps, relinquished temporary rank of Colonel and is granted honorary rank of Colonel, 2nd August, 1919.

Lieutenant-Colonel (Honorary Colonel) W. L. Kirkwood, O.B.E., Australian Army Medical Corps, ceased to officiate as Deputy Director Medical Services, Australian Imperial Force in Egypt, 2nd August, 1919.

Major G. B. Lowe, Australian Army Medical Corps, relinquished the appointment of Deputy Assistant Director Medical Services, 2nd Australian Division, 16th April, 1919.

Major G. B. Lowe, Australian Army Medical Corps, having resigned, his appointment in the Australian Imperial Force is terminated in England on 3rd November, 1919, but to take effect from 2nd January, 1920.

Major A. J. Macdonald, Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 868, promulgated on page 2469 of *Commonwealth of Australia Gazette*, No. 138/19, is cancelled.

Major (Honorary Lieutenant-Colonel) J. L. Shellshear, D.S.O., Australian Army Medical Corps, having resigned, his appointment in the Australian Imperial Force is terminated in England on 12th November, 1919, but to take effect from 3rd January, 1920.

Captain (Temporary Major) E. Tyrie, Australian Army Medical Corps, relinquished the temporary rank of Major, and is granted the honorary rank of Major, 2nd August, 1919.

Captain G. C. Wellisch, Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 868, promulgated on page 2470 of *Commonwealth of Australia Gazette*, No. 139/19, is cancelled.

Third Military District.

Major G. Fenton, Australian Army Medical Corps, having resigned, his appointment in the Australian Im-

perial Force is terminated in England on 26th November. 1919, but to take effect from 8th March, 1920.

Major S. C. Fitzpatrick, M.C., Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 8, promulgated on page 36 of *Commonwealth of Australia Gazette*, No. 4/20, is cancelled.

Colonel R. Fowler, O.B.E., Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 868, promulgated on page 2470 of *Commonwealth of Australia Gazette*, No. 138/19, is cancelled.

Captain (Temporary Major) K. A. McLean, M.C., Australian Army Medical Corps, relinquished the temporary rank of Major and is granted the honorary rank of Major, 3rd November, 1919.

Fourth Military District.

Captain H. W. Davies, Australian Army Medical Corps. The notification regarding the termination of the appointment of this officer, which appeared in Executive Minute, No. 8, promulgated on page 36 of *Commonwealth of Australia Gazette*, No. 4/20, is cancelled.

Major E. A. Guymer, Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 868, promulgated on page 2471 of *Commonwealth of Australia Gazette*, No. 138/19, is cancelled.

Fifth Military District.

Major J. B. Lewis, Australian Army Medical Corps. The notification regarding the termination of appointment of this officer, which appeared in Executive Minute, No. 868, promulgated on page 2472 of *Commonwealth of Australia Gazette*, No. 138/19, is cancelled.

APPOINTMENTS TERMINATED.

First Military District.

Colonel A. G. Butler. D.S.O., 29th February, 1920.

Second Military District.

Colonel A. H. Mosley, D.S.O., 27th February, 1920.
Major W. J. Stack, D.S.O., 13th February, 1920.
Major W. Chisholm, 30th December, 1919.
Major C. F. Robinson, M.C., 27th February, 1920.
Captain C. A. Mitchell, 25th October, 1919.
Captain L. J. Hunter, M.C., 30th January, 1920.
Captain C. B. Bateman, 20th February, 1920.
Captain J. F. G. Fitzhardinge, M.C., 1st January, 1920.
Captain S. A. McDonnell, 29th January, 1920.
Captain A. J. D. Howard, 30th January, 1920.
Captain L. T. Allsop, M.C., 19th January, 1920.
Captain J. J. C. Lamrock, 22nd January, 1920.

Third Military District.

Major H. A. C. Irving, 11th January, 1920.
Major A. E. R. White, 6th December, 1919.
Captain J. P. Horgan, 12th December, 1919.
Captain H. F. Maudsley, M.C., 6th February, 1920.
Captain T. R. Jagger, M.C., 4th February, 1920.
Captain H. C. Disher, 22nd January, 1920.
Captain W. G. H. Tregear, 14th January, 1920.
Captain E. N. H. Gandevia, 28th December, 1919.

Fourth Military District.

Captain N. B. G. Abbott, 29th January, 1920.

Fifth Military District.

Major T. L. Anderson, O.B.E., 19th January, 1920.

Australian Military Forces.

APPOINTMENTS, PROMOTIONS, ETC.

First Military District.

Australian Army Medical Corps—

Major and Brevet-Lieutenant-Colonel D. G. Croll, C.B.E., to be Lieutenant-Colonel, 31st January, 1920.

Third Military District.

Australian Army Medical Corps—

Captain K. M. Doig, M.C., to be transferred to the Reserve of Officers, 16th February, 1920.

Captain (Honorary Major) C. G. G. Moodie to be transferred from the Australian Army Medical Corps, Fourth Military District, with corps seniority as from date of transfer, 16th February, 1920.

Australian Army Medical Corps Reserve—

John Charles Ross to be Honorary Captain, 10th August, 1919.

Fourth Military District.

Australian Army Medical Corps—

Captains G. H. S. Dobbyn and J. G. Mackay to be transferred to the Reserve of Officers, 1st January, 1920.

Captain (Honorary Major) C. G. G. Moodie to be transferred to the Australian Army Medical Corps, Third Military District, with corps seniority as from date of transfer, 16th February, 1920.

Australian Army Medical Corps Reserve—

Honorary Majors A. Watson, J. A. G. Hamilton, B. Poulton and A. A. Lendon to be retired under the provisions of Australian Military Regulation 152, 31st January, 1920.

Fifth Military District.

Australian Army Medical Corps Reserve—

Honorary Captain W. J. Beveridge to be granted the temporary rank and pay of Major whilst employed (part-time) as V.D. Specialist, Fifth Military District, 12th February, 1920.

The temporary rank of Major granted to Honorary Captain N. N. Davis is terminated, 11th February, 1920.

Sixth Military District.

Australian Army Medical Corps Reserve—

Frank Beauchamp Martin to be Honorary Captain, 1st February, 1920.

A society has been formed in Columbus, Ohio, United States of America, called the National Anæsthesia Research Society, for the purpose of collecting and prosecuting original research in this branch of medicine. The constitution of the society has been drawn up with a view to the regulation of original research work and of the collection of extant knowledge concerning anæsthesia and anæsthetics. The society will use its influence to prevent the publication of any false or unauthentic statements concerning anæsthesia. Dr. F. H. McMechan, the Editor of the *Quarterly Supplement of the American Year Book of Anæsthetics and Analgesia*, will undertake the editing of material designed for the professional press, while the Committee, of which Dr. W. I. Jones is the Secretary, will undertake the supervision of original work and will offer facilities and advice to those undertaking it. The offices of the society are at 16 East Broad Street, Columbus. Ohio, United States of America.

In the *Queensland Government Gazette* of March 6, 1920, the newly-adopted rules relating to the honorary medical staff of the Brisbane Hospital, have been published. The rules provide for the appointment of an advisory board consisting of five members of the medical staff, whose duties include the recommendation for appointment of members of the honorary medical staff. In view of the importance of this matter, we propose to publish in an early issue the main provisions of these rules.

The Commissioner of Public Health of Western Australia has approved of the appointment of Dr. W. P. Yates as Medical Officer of Health to the Municipality of Busselton.

Dr. A. J. Collins, D.S.O., M.C., has been appointed Medical Superintendent of the Royal Prince Alfred Hospital, Sydney.

The Medical Journal of Australia.

SATURDAY, MARCH 13, 1920.

Preparing for Emergencies.

There are indications that a fresh outbreak of influenza will occur in Australia within a short space of time. In other parts of the world this uncanny disease has reappeared, either in a mild form or, if the reports available can be accepted, in a virulent form. The infection may be imported, or it may awaken from its dormant condition and again spread in the several States. It is impossible to prophesy whether the storm will break or whether the clouds will disperse unbroken. It is equally impossible to anticipate the form or degree of severity the disease will take should the expected occur. The omens should be heeded and preparations should be made to meet what fate has in store for Australia. In the States the authorities are already busy, endeavouring to make arrangements with the members of the medical profession to carry out the work of attending to those who may fall ill. What can be done to mitigate the evil? The experience of last year is still fresh in the memory of the medical profession and it would be well to use that experience in the best interests of the community. A year ago there was something approaching a panic and the measures adopted were largely of the nature of panic measures. At all costs the public should be reassured by plain statements concerning the disease. Confidence can only be attained if the medical profession admits frankly and without reserve the extent of its ignorance of the causation of influenza and the limitations of its powers to gain a mastery over the disease.

In our issue last week we published an important and highly instructive discussion on the pathology of influenza. Dr. S. W. Patterson, the Director of the Walter and Eliza Hall Institute of Research in Pathology and Medicine, is apparently inclined to favour the view that influenza is caused by a filter-passing organism, although many authorities are not prepared to accept the scant evidence offered by Nicolle and Lebailly, by Gibson, Bowman and Connor and by Bradford, Bashford and Wilson. In the absence of definite proof, we should confess complete ignorance as to the primary cause of this affection. Dr. Patterson's remarkable curve of the frequency with which the bacillus of Pfeiffer was recovered from the lungs and bronchi of patients suffering from influenza in France, is strongly suggestive of a very close association between the unknown virus and this organism. He and many others have demonstrated that pneumococci are also common secondary invaders. It has further been shown that Types III. and IV. are usually found. There appears to be a consensus of opinion concerning the importance of these observations in their bearing on the treatment of the pulmonary complications of influenza. Similar unanimity, however, does not exist in regard to prophylaxis. Inoculation with vaccines containing influenza bacilli, pneumococci and other associated organisms was tried in many countries by many competent observers and it would be hazardous to say whether the verdict is in favour or against a prophylactic value. In these circumstances, if the health authorities include vaccine in their programme, they should not endeavour to compel anyone to submit to this procedure, nor should they mislead the public by definite statements that these vaccines exercise a power of prevention. In the next place, the authorities are unlikely to repeat the mistake of requiring persons wishing to travel by train to use an inhalation chamber. It has been shown that exposure to an atmosphere of steam and sprayed solution of zinc sulphate is not quite harmless. In view of the curve of the epidemic in New South Wales and Victoria a year ago, it appears that the expedient of masking is without any value. It had the effect of creating discomfort to those who were compelled to wear them, unless, indeed, the wearers applied the gauze in such a manner that it did not become saturated with moisture within ten or twenty minutes. It is to be hoped that none of the health authorities will institute compulsion in this connexion, either in public conveyances or in public halls and rooms. From a common sense point of view, it is improbable that masking could have any beneficial effect in preventing the spread of infection.

The question of the closure of places of entertain-

ment, of churches and of schools is much more difficult to answer. In the course of a dangerous epidemic, especially when the infection is by droplets of infected saliva or mucus, as is usually held to be the case in influenza, the risk of infection is undoubtedly enhanced when persons crowd together in a confined space. Victor Vaughan has shown quite clearly that the incidence of pneumonia among the troops in the American camps was reduced to a very great extent by the avoidance of close formation during drill and of crowding in the rooms where the men slept. As far as schools are concerned, it should be easy to prevent any undue crowding. The children are usually well situated at school as far as hygienic environment is concerned. The teachers can exert a helpful supervision, particularly if daily medical inspection by a medical practitioner can be arranged. There is far more intimate contact between children playing in the gutter than in the school room. For this reason it appears to us that the schools could be kept open with advantage, at all events while the teaching staff is not reduced as a result of the disease. Churches, theatres and picture palaces can be rendered relatively safe, if those attending are kept farther apart than usual. The removal of alternate seats and of alternate rows of seats should suffice to diminish the risk of a spread of infection, provided that persons obviously ill are excluded from attending. We cannot conceive any means of removing the grave risk inherent in the moving and surging crowd viewing a race meeting, a cricket match or a boxing competition.

The best prospects of stemming the spread of infection would appear to be in the immediate isolation of all persons showing the signs of an impending attack. Isolation should not be delayed until the diagnosis is firmly established. It should be applied on reasonable suspicion of infection. No great harm is done if some people are subjected to rigid control for a day or two without real need. The more promptly and the more universally the isolation of patients in the early stages is carried out, the less will be the amount of infection uncontrolled. In the last place, the general resistance to infection of the community as a whole is greatly lowered by fright, panic and constant reminders of the existing dangers. Only good can follow the endeavours to allay public fear and to reassure the people that they are safer if they continue to follow their ordinary vocations than if they seek to provide protection by endeavouring to run away.

In our opinion, there is little that can be done to prevent the spread of the infection, once it gains a firm hold on a community. Organized assistance for the prompt isolation and treatment of the sufferers represents the best form of preparation to meet the foe we are awaiting.

TOXÆMIA AND SEPSIS.

Clinicians and pathologists have adopted the habit of endeavouring to explain certain symptom-complexes by assuming the presence of a toxin which they would localize in an ascertained septic focus. This assumption implies the absorption of a secretion or metabolic product of the bacteria producing the localized affection. No explanation is offered concerning the nature of the alleged toxin, nor of its pharmacological action, nor of the manner in which it is absorbed and utilized in the body. Quite recently we published a very thoughtful article by Dr. Antill Pockley, in which he subjected to a sharp critical analysis the claim that iritis is caused by some hypothetical toxin elaborated in a carious tooth or in an infected tonsil. Dr. Pockley asks the pertinent question whether it can seriously be maintained that a toxin circulating in the system can select a tissue like the iris for exerting a pathological change and leave the equally accessible tissue of the retina untouched. It is conceivable that a soluble poison could exercise a selective affinity for a particular kind of tissue. Iodine, when absorbed into the body, does not distribute itself equally in all the tissues. But in this case the distribution is a wide one and the affinity is manifested by a concentration in adenoid tissue. It has been found that the thyroid gland becomes saturated with iodine before considerable quantities accumulate in other organs. Moreover, it has been ascertained that iodine is claimed by inflammatory cells invading certain foci of infection. But it must be admitted that there is a fundamental difference between this form of selective absorption and the attraction of an organic toxin to a composite tissue of a specialized kind. There is, however, no evidence

of the presence of a soluble poison arising from a localized septic focus. This alleged poison is postulated as a substance capable of producing a change of a peculiar type of inflammation. Hitherto no such poison has been shown to exist. It may, therefore, be stated that the toxæmic cause of iritis is pure assumption, based on very slender grounds. If this be true of iritis, it is also true of other conditions. The clinical observation has been made very frequently of an association of caries of the teeth or infection of the tonsils or the mucous membrane of the nasal passages and an infective arthritis or a disturbance of the thyroid gland or a gastric ulcer. In the absence of a discernible cause for arthritis, goître or ulcer, the clinician finds it convenient to imagine that a hypothetical toxin is responsible for the appearances. Dr. Pockley has challenged the advocates of the toxin or sepsis theories of iritis to produce irrefutable evidence, nay, absolute proof, of the claim that the removal of the source of the hypothetical poison or of the bacteria results in a clearing up of the iritis. It may be admitted that a carious tooth is not indifferent to the general health of the individual. In the same way, the person with an infected tonsil, without any complicating or associated affection, is liberated of definite signs of ill-health when the infection is removed. An infection in the tonsil is accompanied by pyrexia, due to the absorption of the disintegration products of the bacterial protein. Of this there is definite evidence. The introduction into the blood stream of distilled water, contaminated with dead and disintegrating bacteria, is followed by a rise in temperature. It would seem that pyrexia is always produced by the action of a chemical substance of this nature on the heat-regulating apparatus. The action is, no doubt, not limited to this one mechanism, but is extended to many organs and tissues. There is, however, no data on which a theory could be built of a localized action of such a derivative of bacterial protein on the serous membranes of joints. Little by little, knowledge is being collected of the toxicological effects of certain organic substances, which are formed under normal and abnormal conditions within the body. There is a definite meaning attached to the claim that the symptoms of diphtheria or of tetanus are produced by a toxin, notwithstanding the contentions recently put forward concerning the specificity of these products. Similarly, recent experimental work on acidosis, shock, uræmia and a few other conditions has demonstrated that these symptom-complexes are produced by chemical bodies of well-defined constitution and peculiar physiological action. But the doctrines found to be involved in these conditions should not be applied to affections with which no poison has yet been shown to be associated. In rheumatism of all kinds it is possible that the infecting organism that induces the arthritis and the changes in the heart is the same as that which produces the tonsillar changes. It would, indeed, be singular if the tonsil were not infected at times with this organism, since there is *a priori* evidence that the invasion of the body by the causative agent of rheumatism is very widespread and involves many tissues and organs. Unfortunately, it has not been definitely established whether the diplococcus of Poynton and Paine and Meyer and Meltzer is the causal organism or whether the virus has yet to be discovered. The involvement of the tonsil in acute rheumatism, however, should not be regarded as a cause. The term septic is often applied to tonsils infected by pyogenic bacteria. It has not been proved that a tonsil infected with a pyogenic organism is capable of giving rise to changes elsewhere in the body, other than those of general intoxication and pyrexia. The argument is frequently used that the removal of these so-called septic tonsils results in the amelioration or cure of a co-existing exophthalmic goître or rheumatic fibrositis. Any therapeutic measure that raises the general resistance of the organism, will be followed by a reduction in the severity of the signs and symptoms of Graves's disease or by the temporary improvement in the rheumatic affection. Very little is known of the actual mechanism involved in the chronic rheumatic processes. It may be that the absence of pyrexia is due to a shutting off of the dead and disintegrating bacteria. But it is evident that, whatever the mechanism in this condition or in Graves's disease, the organism would have a better chance of reducing the signs and symptoms when freed of a source of general intoxication. Progress in pathology will be more rapid if the conception of toxæmia were strictly limited to those few conditions in which a poison has been demonstrated to exist.

THE HANDLING OF MENTAL DEFECTIVES.

It is held in some quarters that the problem of the mentally defective belongs more correctly to the sphere of the sociologist than to that of the medical psychologist. The justification for this claim is difficult to discover. While the science of mental activity has received more profound study from non-medical philosophers, the study of the differentiation between normal and abnormal mental processes has attracted the exclusive attention of medical practitioners. In no country is the care of the insane or the determination of the presence of mental disease entrusted to a non-medical person. When the abnormality of the mental process is dependent on an arrest of the development of the brain, the same knowledge of physiology and psychology is required as in psychiatry. The permanent officials of governmental departments of public instruction usually fail to grasp the fundamental details of the problem of the mentally defective child. These children pass into the control of the schoolmaster in large numbers, together with normal children. Save in very exceptional circumstances the pedagogue does his best to apply the same form of teaching to defective children as he does to normal children, until he discovers that these efforts are unavailing. He then passes the defectives over to the special class for backward children and the endeavour to awaken the intelligence is continued along lines more or less standardized for backward children. Sooner or later, if the mental defect is extreme, the training resolves itself into one or other form of manual work, which the child may learn to accomplish in a slovenly way. The child reaches the age when it can be liberated from this drudgery and then the governmental department that has accepted the responsibility for its proper care and instruction, washes its hands of all further responsibility. The individual has reached the age of approaching adolescence, when the instincts are awakened and when restraint is required for social behaviour and for the safety of other members of the community. The defective person at this stage is incapable of exercising this necessary restraint and, as a consequence, as soon as the opportunity offers itself, sexual passion asserts itself, crimes are committed and the law endeavours to apply punishment for an offence, as if the offender were a normal individual. The recruiting of girls in the ranks of prostitution is too often a mark of the failure of the department of public instruction to recognize the fact that mental deficiency is a purely medical problem, needing the same form of medical supervision in institutions as does insanity.

We have recently received an able article by Miss Alice M. Nash, the Principal of the School Department, and Mr. S. D. Porteus, Director of Research at the Training School at Vineland.[1] We regret to see that the authors use the term educational treatment in connexion with defectives. The elaboration of their methods, however, demonstrates quite clearly that they do not aim at an education, but rather of a careful individual treatment, calculated to instil habits of obedience and order in children incapable of distinguishing the reason for decent behaviour. They have come to the conclusion that the treatment accorded to these unfortunate children is, as a rule, sterile and fruitless. An attempt is made by them to predict by means of tests the potentialities for training possessed by the defective. The Binet test, they have found, gives a close indication of the ordinary learning capacity. On the other hand, the Porteus test reveals the ability of the pupil to undergo industrial training. The Binet test overestimates the practical ability of the mentally unstable individual with good learning capacity, while the Porteus test overestimates the ability of the steady-going defective with poor learning capacity. Both tests should therefore be used. When it is found that a child has a mental level of two years, it is necessary to exclude it from the kindergarten department. The authors have found that a defective of a mental age of less than seven years can be taught to read, but in fact does not read in after life. They arrived at the recognition of the rule that instruction in ordinary school subjects is waste of time and wholly useless when the child has not made one-half of the mental progress normal for his age. Experience has shown that it is quite easy to train a mentally defective child with retardation of four years or more to perform simple tasks, although it may be quite impossible to cause him to realize the reason for his simple actions. They avoid all training in directions which will ultimately prove useless to the individual. They favour needlework in the manual training of defectives of middle and high grade. The equipment is cheap and there is always a demand for the child who can sew. But in teaching defectives to sew, it is useless to endeavour to impart information on sewing as a science. It is tempting to give the children simple and easy stitches at first and to increase the complexity of the tasks by logical stages. The defective fails to respond. When the child is given needle, cotton and material and is allowed to make a doll's dress as best it can, the result is often surprisingly good. The defective can mend his or her own clothing and can make new garments. The work, under favourable conditions, may prove of future use, either as a means of partial self-support or as a useful occupation in the individual's home. Woodwork is condemned, reluctantly, it is true, because the defective cannot hope to become skilled and has no chance of entering into competition with the normal-minded individual if he adopts carpentry as a trade. Basket work is still less adapted to the ability of the defective. Only under the most unusual circumstances can a defective earn a living at basket making. Broom and brush making can be taught to defective children, but the product is rarely saleable, except when it is finished in an institution. Rug weaving and quilt making are also too complicated and require too much reasoning power to be of practical value as a means of earning a livelihood. The authors recommend domestic training, especially because, in many instances, the individual can find a living by its means. In short, the experience of the experts at Vineland coincides to a large extent with that of other schools for defective children. It is possible

[1] Educational Treatment of Defectives, by Alice M. Nash and S. D. Porteus, *Training School Bulletin*, Vineland, New Jersey, 1919.

with patience and persistence to train the children to perform many tasks in a satisfactory manner, but save in the cases of minor degrees of deficiency, this training is of relatively small value as soon as the child passes out of the institution. A moron who is incapable of exercising reason sufficient to acquire some general knowledge or to learn a trade, is so obviously unfitted to spend his life outside an institution that it seems hardly worth while to consider which form of manual work might conceivably enable him to earn a living. The problem of the moral imbecile or of the defective with relatively good learning capacity offers far greater difficulties.

COMPLEMENT FIXATION IN TUBERCULOSIS.

Repeated attempts have been made during the past 25 years to discover a reliable specific reaction in the diagnosis of tuberculosis. Since Koch demonstrated in 1882 the means of distinguishing the tubercle bacillus, its detection in the sputum has remained the one definite diagnostic method. In 1890 Koch announced that he had discovered a specific material. In the early days it was employed almost exclusively for therapeutic purposes, but even from the first Koch indicated its diagnostic uses. The subcutaneous tuberculin test is now recognized as having definite limitations. In the first place, the tuberculin reaction follows even after complete cicatrization of an old tubercular focus. A general reaction is indicative of an active, latent or healed infection. A focal reaction reveals an active or latent tuberculosis, but not necessarily an infection requiring treatment. Clinicians have therefore sought for other diagnostic aids. The ophthalmo-reaction of Calmette, the cutaneous test of von Pirquet and the per-cutaneous test have claimed adherents without meeting with universal adoption. In 1900 Arloing and Courmont claimed that an agglutination test carried out with a homogeneous culture of tubercle bacilli could be employed with safety and benefit. Other observers, however, proved that the agglutination reaction suffered from the same defects as the tuberculin test; it discovered past infections, as well as present ones. Indeed, it seemed as if the serum of some uninfected persons could agglutinate the emulsion of bacilli as strongly as the serum of consumptives. Since that date many new suggestions have been brought forward, but none has provided what clinicians need, namely, a reaction limited to active infections. More recently the complement fixation phenomenon of Bordet and Gengou has been applied to tuberculosis. The antigen used in the majority of these experiments has been a methyl alcohol extract of dried, powdered tubercle bacilli. The results that have been obtained at the hands of different investigators, have varied very considerably. While these records are conflicting and contradictory, the majority of authorities are little disposed to ascribe a specific significance to the test. Among the more recent investigations on this subject is that of Dr. W. H. Moursund.[1] This observer has applied the test to the serum of 186 patients. Of this number, 103 were suffering from active tuberculosis, as evidenced by clinical signs; 51 were said to have latent tuberculosis. There was also a patient with tuberculosis of the epididymis and 31 who were suffering from affections other than tuberculosis. Only 16 of the persons with active tuberculosis yielded a positive reaction. One patient with latent tuberculosis yielded a positive reaction and his serum gave a positive Wassermann reaction. Similarly, the serum of one of the non-tubercular patients yielded a simultaneous reaction with the tubercle bacillus antigen and with a syphilitic antigen. The author proceeded to ascertain the behaviour of the serum toward the tubercle bacillus when a positive Wassermann reaction was obtained. The serum of 100 persons yielding a positive Wassermann reaction was tested with the tubercle bacillus antigen. A positive reaction to tubercle bacilli was obtained 45 times. A positive reaction to the gonococcus antigen was obtained 12 times out of 28. When a glanders antigen was used three positive reactions were noted out of 59 sera. The serum of 55 of the same persons was tested against a streptococcus antigen, but no reactions were obtained. It appears that the frequency of the positive reaction with tubercle bacillus antigen increased in proportion to the dilution of the upper limit of the Wassermann reaction. The author is not prepared to accept either a diagnostic value for the complement fixation test in tuberculosis, nor even a specific reaction. It appears to him incredible that 45% of syphilities without any signs of tuberculosis should be tubercular. It seems probable that the reaction is not specific in the sense that the serum of every person infected with tuberculosis contains an antibody capable of anchoring itself on the tubercle bacillus antigen. It is doubtful whether the serum contains antibodies of this nature. The tendency during the past few years has been to deny the specificity of many of the biological reactions. The Wassermann reaction does not depend on the presence of any specific constituent of the *Spirochæta pallida*. It is uncertain whether the tuberculin reaction depends on a specific protein of the tubercle bacillus or whether the tubercular lesion is hypersensitive to all proteins. A reaction can be obtained in many cases with a foreign protein, such as that contained in milk. Be this as it may, there seems to be little room for difference of opinion concerning the failure of the complement fixation test as applied to the diagnosis of tuberculosis.

[1] *The Journal of Infectious Diseases*, Vol. 26, No. 1, January, 1920.

The Council of the University of Melbourne have appointed Dr. J. I. Connor Clinical Research Scholar for 1920 and Dr. Percy A. Stevens Cancer Research Scholar for 1920. The Cancer Research Scholarship was founded by Sir John Grice. The scholar receives board and residence in the Melbourne Hospital, a place in the Walter and Eliza Hall Institute for Research in Pathology and Medicine and a salary of £250 a year.

We note with gratification that Lady Barrett, Dr. Jane S. Grieg, Dr. Constance Ellis and Dr. Georgina Sweet have been elected members of the Council of the College of Domestic Economy in the Department of Public Instruction of Victoria.

The date on which the *Venereal Diseases Act, 1918* (New South Wales), will come into operation has again been postponed for three months.

Abstracts from Current Medical Literature.

DERMATOLOGY.

(95) The Treatment of Psoriasis.

William Allen Pusey records a case as an illustration of the futility of most of the empiric treatment given in psoriasis (*Journ. Cutan. Diseases, incl. Syphilis, December*, 1919). The patient was a dentist. The disease had been present for ten years. During three years he had received the following treatment. (*i.*) Three years before he took six doses of emetin, each 1 c.cm. (ampoules containing 0.045 grm.), at three day intervals. (*ii.*) Two years before he was given three doses of salvarsan at intervals of five or six days. At the same time he received intramuscular injections of mercury at three day intervals; this was not as a result of a mistaken diagnosis of syphilis, but was for psoriasis. (*iii.*) At the same time, and following the salvarsan, he was given 25 injections of staphylococcus and streptococcus vaccines at three day intervals. Sufficiently large doses were given to produce a considerable reaction from each of the first injections. (*iv.*) He had taken for a period of one year, with intermissions, Fowler's solution, from three to fifteen drops three times a day, but had not taken more than 60 c.cm. in the aggregate. When he took enough of it to make him ill, the psoriasis cleared up, but recurred in a month. (*v.*) A year and a half before, he received five injections of autoserum at five day intervals. (*vi.*) For the past seven months he had been on as strict a non-protein diet as he could devise for himself. He was an educated dentist and had read all about the dietetics of psoriasis. He had been intelligent in eliminating proteins from his diet. During these seven months he had not eaten meats, gravies, eggs, soup, fish, sea food, cheese, nuts or milk, except the milk in bread. He had eaten no cake or other food containing eggs, as far as he knew; no beans or peas, except that he had allowed himself the luxury of one portion of beans monthly. He had eaten very little white bread, but had substituted brown bread with some Graham bread. (*vii.*) Eight weeks ago he had had his tonsils removed. (*viii.*) At the same time he had seven teeth removed. Both of these operations were done specifically for his psoriasis. (*ix.*) One month ago, at a well-known sanatorium, he had a few Röntgen-ray exposures. In spite of all these measures the psoriasis showed no improvement; in fact, no material change of any kind, but the general condition of the patient had deteriorated. The case is recorded as negative evidence of some value against the majority of these methods of treatment.

(96) Para-Psoriasis Lichenoides Linearis.

A somewhat unique case of resistant erythrodermia, which can be placed in that group of cutaneous diseases at present designated para-psoriasis is described by H. J. F. Wallhauser (*Journ. Cutan. Diseases, incl. Syphilis*, December, 1919). The patient was a woman, 31 years of age. The condition first manifested itself nine years previously, when the hands appeared unusually reddened on exposure to decided changes of temperature. At the same time, peculiar pains developed in both upper and lower extremities, referable as a rule, to the parts that had lately been the sites of the eruption. These pains were described as dull, changing to pricking on exposure to extreme cold or warmth. They persisted. The eruption developed about three weeks after the onset of pain. Appearing first on the upper extremities, it extended gradually, was complete in about three months and remained practically unchanged to the time when the author prepared his report. The eruption was symmetrical, involving the upper extremities as far as the infraspinous and infrascapular regions and the lower extremities where it ended abruptly over the crest of the ilium posteriorly and the groin anteriorly. The primary lesions consisted of glistening, intensely red, round and oval papules, varying in size from that of a pin's head to that of a lentil, as well as pale pink and colourless, shiny macules, with closely adherent scales. The lesions were disseminated in some locations, while in others variously shaped lesions and patches had developed by grouping and coalescence. On the lower extremities the morphological aspect changed completely, the lesions being arranged in long, parallel lines, extending in various directions, corresponding distinctly to the cleavage lines of Langer, a most interesting and striking feature and one not previously described in this group of cases. The eruption usually bears a close resemblance to *lichen planus*, but a distinction in this case was readily made by the oval or rounded outline of the papules and the absence of the surface markings of Wickham. The difference in colour was characteristic; it was brighter and inclined to cardinal, rather than purplish or violaceous red. Adding the persistent, unchanging character of the eruption over a period of nine years, conclusively established the distinction between these conditions. The clinical resemblance to *lichen planus* and the persistent character of the eruption, resisting all forms of medication, together with the microscopic findings, should establish the relationship of this case to the group of conditions considered under para-psoriasis.

(97) Examination of the Vermiform Appendix.

E. J. Spriggs finds that the appendix can be demonstrated radiographically in a great percentage of cases (*Archives of Rad. and Electrotherapy*, March, 1919). Barium sulphate in buttermilk is the usual meal and is given by mouth. The barium enema does not fill the appendix. Screen examinations and repeated plate examinations are employed. The patient is examined in the supine position, three to four hours, twelve hours and twenty-four hours after the meal. If the appendix is seen to fill and empty itself within a few seconds, it is usually normal. The appendix should not contain barium after the caecum is empty. If it does, it is abnormal. Opinions may be given as to the state of the appendix by a careful consideration of the appearances, special attention being given to the following: (*i.*) delay or stasis, (*ii.*) constriction or dilatation, (*iii.*) fæcal concretions, (*iv.*) mobility, (*v.*) spasm, (*vi.*) tenderness on palpation and (*vii.*) position. Numerous excellent skiagrams illustrate this article.

(98) Treatment of Inoperable Cancer.

Emil Beck and G. W. Warner consider that the prognosis of cases of recurrence of malignant disease after operation is usually hopeless from a surgical point of view (*Surg. Gynec. and Obstet.*, October, 1919). At the primary operation the surgeon has generally made as wide a removal as possible and in cases of recurrence it is better to trust to some other method in order to give relief. The authors advise the removal of as wide an area as possible, together with the overlying skin and fat. No attempt to cover by flaps is made, but the wound is left widely open. The whole object of this procedure is to convert the closed growth into an open or superficial one. Heavy doses of soft X-rays are now applied. Healthy granulation appears and in a large number of quoted cases the skin will grow in from the edges. The authors claim that a cure is often effected. They state that numerous growths treated by this method have remained healed for many years.

(99) Stereoscopic Radiography.

J. Mackenzie Davidson deals concisely with the phenomena of stereoscopic radiography (*Archives of Rad. and Electrotherapy*, April, 1919). Two aspects of the subject are considered; first, the condition of vision of the observer and, second, the proper preparation, placing and viewing of the plates. The observer must possess binocular vision, *i.e.*, he must see the two pictures and obtain therefrom a single, combined impression in the brain. In addition, the observer must obtain practice in the viewing of stereoscopic pictures. In taking the radiograms, the anode is shifted 6 cm. between exposures. The author does not use the combined shift and tilt of the tube, as recommended by some American workers. Mackenzie Davidson refers to the possibility of stereoscopic fluoroscopy and describes an instrument which allows of this practice.

(100) The Diagnosis of Vesical Tumours.

G. F. Pfahler revives the old method of examination of the bladder by the injection of air into the viscus (*Amer. Journ. Röntgen.*, August, 1919). The method is intended as an adjuvant to cystoscopy and for use in those cases in which cystoscopy is impracticable; that is, when the pain is severe, when

the cystoscope cannot be passed and when there is profuse hæmorrhage. The technique described is as follows: plates are taken of the bladder to exclude calculus; the bladder is catheterized with the usual aseptic precautions and any residual urine withdrawn. Air is then pumped in with an ordinary atomizer bulb until the patient complains of distension or distress; the catheter is then clamped. Skiagrams are taken in the antero-posterior and in the postero-anterior directions and the air is allowed to escape. No ill effects follow this procedure and any tumours or irregularities are shown as less translucent areas in the negative and their shape, position and size may be determined.

BIOLOGICAL CHEMISTRY.

(101) Water Soluble and Anti-Neuritic Vitamines.

Considerable difference of opinion exists as to whether the water-soluble, growth-promoting vitamine or "water-soluble B" and antineuritic vitamine are identical. H. H. Mitchell (*Journ. Biolog. Chemistry,* December, 1919) discusses the evidence for and against their identity. Some investigators use the terms "water-soluble B" and "anti-neuritic" vitamine interchangeably; others are more conservative and consider that the identity of the two is as yet merely a matter of conjecture. In view of the importance of the question of the identity of these two vitamines, one essential for the maintenance of life and growth and the other for the prevention of multiple neuritis, a searching critical consideration of the evidence is useful. The conclusion that the two are identical seems to be based on the following grounds: (*i.*) The distribution of the two substances in natural food products is very similar. (*ii.*) The lack of known sources of water-soluble B in the diet of various species of experimental animals seems generally, if not always, to result in symptoms of nerve degeneration and paralysis. (*iii.*) Extracts of natural food products, possessing growth-promoting properties, are said to contain very probably only one indispensable vitamine, though supplementing satisfactorily a ration containing no other possible source of antineuritic vitamine. (*iv.*) The solubilities of the two vitamines in the common solvents is said to be identical. (*v.*) Attempts to isolate the two vitamines have shown that they possess identical precipitants and adsorbents. (*vi.*) The stability of the two substances seems to be similar, if not identical. These points are discussed at some length. Though green vegetables, such as cabbages and spinach, have been found to be rather rich sources of water-soluble B, it has been noted that cabbage contains antineuritic vitamine in a quite low concentration. The experimental evidence, however, is not quite conclusive. The occurrence of symptoms of paralysis of the hind limbs in animals subsisting on rations totally lacking in water-soluble B is not universally noted. Similar symptoms may arise from the presence of toxic substances in apparently normal food products. The water-soluble, growth-promoting vitamine of yeast is said to be insoluble in absolute alcohol. On the other hand, the anti-neuritic curative substance of rice polishings and of beef has been repeatedly extracted with absolute alcohol. Acetone and benzene seem to extract the antineuritic vitamine from wheat germ, but not the water-soluble, growth-promoting vitamine. The evidence that the two vitamines have the same precipitants and adsorbents is not unequivocal. The experiments on the stability of the water-soluble, growth-promoting vitamine and of the antineuritic vitamine afford no sure basis of distinction, though they are suggestive as indicating a greater stability of the former to hot alkali and to temperatures above 100° C.. In evaluating the data on the occurrence and properties of the two vitamines, there seems to be very good reasons for doubting their identity and there is need of much further work to settle the point. Until such work is done in a quantitative way, an interchangeable use of the terms "water-soluble B" and "antineuritic vitamine" serves no useful purpose, but tends rather to impede progress in this direction.

(102) Detection of Abnormal Milk.

In the official inspection of market milk, the primary object is to detect samples that are abnormal in composition, as well as in sanitary character. Attempts have been made to minimize the labour of inspection by the use of quick and simple methods and J. C. Baker and L. L. Van Slyke (*Journ. Biolog. Chemistry,* December, 1919) suggest such a method. The method is based on the use of the dye, brom-cresol purple. One drop of a saturated water solution is mixed with 3 c.cm. of milk and the colour is observed. Normal fresh milk gives a bluish grey colour. The production of a darker or lighter colour serves to awaken suspicion in regard to the normal character of the milk. The colour is made lighter by acids, formaldehyde. and also by heating above the usual point of pasteurization. The colour becomes deeper blue in the case of milk from diseased udders, watered milk, skimmed milk and milk containing added alkaline salts. In the inspection of milk, a sample is taken for further detailed examination in the laboratory, if the colour is sufficiently lighter or darker than normal, to indicate the probability of some abnormal condition. A standard of colours can be prepared, by which comparison can be made and conclusions more easily reached as to the normality or abnormality of the samples examined.

(103) Composition of the Urine in Tropical Australia.

W. J. Young (*Annals Trop. Med. and Parasit.,* December, 1919) has studied the effect of life in North Queensland on the composition of the urine of white men. The volume, specific gravity, total nitrogen, sodium, chloride, phosphate and freezing-point of the urine of 25 white men of varied occupations were determined during the hot months of the year. The average volume was found to be considerably less than that given as an average for Europeans in Europe, being 782 c.cm., as against 1,500 c.cm., varying from 375 c.cm. to 1,487 c.cm.. The volume was considerably increased in the cooler season. The specific gravity was higher, the freezing-point within the range given for temperate climates. The excretion of sodium chloride showed a considerable reduction, seven grammes, as against fifteen grammes in Europe. The actual concentration of sodium chloride in the urine was not very different from that found in temperate climates. The small total quantity of chlorides may be accounted for by the excessive perspiration, a quantity of sodium chloride being excreted in this way. The quantity of sodium chloride excreted in the sweat may amount to 0.1 to 0.4 grammes per 100 c.cm. and there is a daily loss of several litres of sweat. The total nitrogen in the urine was considerably less than is usually found in Europe or in white men in other parts of the tropics; this cannot be accounted for by loss of nitrogen from the skin, which can only amount to one or two grammes per day under normal circumstances. An examination of 360 men and 303 women, not showing any other symptoms of kidney disease, for albuminuria showed 11.7% of men and 4.9% of women with albumin in the urine.

(104) The Diazo Reaction in Epilepsy.

P. Masoin (*Bulletin de l'Academie Royal de Médecine de Belgique,* July, 1919) has studied the diazo reaction of the urine in cases of epilepsy. The diazo reaction was not obtained with the urine of perfectly normal subjects. The conclusions reached are: (*i.*) The diazo reaction in epileptics is an indication of a general upset, which affects most of the urinary excretions and in particular the excretion of nitrogen. (*ii.*) This fact is an argument in favour of the view that certain forms of epilepsy result from a state of auto-intoxication, a true disturbance of cell metabolism. Absence of a diazo reaction in epilepsy justifies a favourable prognosis; the presence of the reaction implies a fatal prognosis in two-thirds of cases. The diazo reaction. which appears on the occasion of epileptic paroxysms, is an indication of a disturbance which affects the nutritive exchanges of the subject. In spite of the semeiological insignificance with which this reaction was first viewed, it seems to be a demonstration of a profound functional disturbance in the mechanism of cellular metabolism. The view that epileptic crises are the result of intoxication by ammonium carbamate is discussed and it is pointed out that the intoxication with ammonium carbamate is probably excessively slow as compared with the rapidity of onset of an epileptic attack and the rapid evolution of the symptoms.

Obituary.

THOMAS PETER ANDERSON STUART.

On March 1, 1920, Thomas Anderson Stuart was laid to rest in the beautiful cemetery on North Head, near Sydney. The scene was a memorable one. Students and colleagues, disciples and co-workers, friends and associates had gathered in hundreds around the open grave. The effect of the great crowd in academic cap and gown and in masonic garb was strikingly impressive and was rendered even more dramatic by the fitting environment. Below the sea lashed itself restlessly, untiringly, without ceasing, against the rocks, creating by slow attrition an impression which neither time nor human effort can efface. So in life had this great man thrown his whole energies into activity, creating influences and erecting institutions that will not die. When it was discovered in March, 1919, that he was suffering from a malignant growth, he struggled bravely to achieve yet more for the benefit of the school he had called into being and for humanity. The extraordinary fortitude and courage that he displayed during the closing months of his career awakened the admiration of all who were associated with him. His life was a long series of achievements. And now he rests at the head of the cliff, with the waves breaking incessantly below, with the sun rising each day beyond the Pacific, to cast its searching rays on to the stone that marks the place they deposited his mortal remains and to tint the epitaph with a flood of gold as it sets beyond the mountains in the west.

Thomas Anderson Stuart was born 64 years ago, in Dumfries, in the south of Scotland. He was the son of Alexander Stuart, the Dean of Guild of Dumfries, and Jane Anderson, a woman of remarkable ability and intellectual vigour. His early education was carried out at the Dumfries Academy. On leaving school, he recognized the value of a liberal education in modern languages and persuaded his parents to send him to the Gymnasium at Wolfenbüttel, in Brunswick, a town renowned for its libraries and educational advantages. Here he acquired a good knowledge of German and French and some working acquaintance with Italian. In 1875, at the age of 19 years, he entered the Medical School of the University of Edinburgh. During the following five years he attracted the attention of his teachers and colleagues. His remarkable powers of recognizing facts, his facility for learning and his natural aptitude to grasp the significance of details enabled him to outpace his compeers with small effort. From his first year he secured all the coveted prizes. Anatomy, physical sciences, botany, chemistry, *materia medica*, medicine and surgery presented no esential difficulties to his receptive mind. He took his degree in 1880 with first-class honours. In the same year he secured the Ettles Scholarship, which was given to the most distinguished graduate of the year. During his student days he joined a group of enthusiasts and worked hard in founding a students' union. He was in the forefront of many movements at Edinburgh and asserted himself at an early stage of his career as a born leader, a man with a commanding spirit. In 1881 he went to Strassburg and worked at the physiological institute, under Professor O. Schmiedeberg. Here he undertook an investigation into the physiological action of the salts of nickel and cobalt. He showed that the subcutaneous or intravenous injection of the oxy-carbonate or citrate of nickel resulted in loss of power, paralyses, convulsions or twitching and opisthotonos, according to the size of the dose. The effects on the central and peripheral nervous system, on the blood pressure and on the secretions were studied. The lethal dose of nickel oxide in rabbits or cats was determined to be 10 mgrs. per kilogram body weight. Dogs proved to be more resistant. His researches with cobalt led to the recognition of a very similar pathology. He was able to show that cobalt is excreted in the urine in the form of a brownish combination, which can be precipitated with acetate of lead. This compound of cobalt can also be removed from solution by means of the phosphate of ammonium and magnesium. Stuart's work corrected the former erroneous conception that the poisonous effect of cobalt salts was due to arsenic contained as impurity. For many years Stuart's work on the toxicology of nickel and cobalt remained the standard authority on the subject. In 1882 he presented a thesis on this research for the degree of Doctor of Medicine. He gained the Gold Medal for it. On his return from Strassburg, Thomas Anderson Stuart became Demonstrator of Physiology and Assistant to Professor W. Rutherford. The opinion held of his ability and competence is reflected in the testimonials by the most eminent scientists of the time, presented to the University of Sydney in 1882. Professor William Turner spoke of him as a man of many accomplishments—at the age of 26 years; Professor W. Rutherford considered that his very excellent natural abilities and attainments eminently qualified him for the chair of Anatomy and Physiology; Sir Joseph (afterwards Lord) Lister stated that he had given evidence of remarkable ability; Professor Schmiedeberg prophesied that he would contribute valuable scientific work; Professor Hans Meyer held that his sound scientific training and talent as a teacher should have induced him not to leave his own country. Equally high praise was accorded him by Professor D. J. Cunningham, Mr. John Chiene, Professor John Wood, Professor Henry D. Littlejohn, Professor Thomas Annandale and many others. Further evidence of his early conquests is contained in the fact that he was elected President of the Royal Medical Society of Edinburgh in 1882.

It will be within the recollection of all that almost from the foundation of the University of Sydney in 1850 strenuous efforts were made to establish a medical school. To those who are not well acquainted with this important chapter of Australian history, we would recommend the perusal of an address delivered by Thomas Anderson Stuart in 1902, entitled "The Majority of the Medical School." This address was delivered on the occasion of the jubilee celebrations of the School. It contains an admirable record of the events that led up to the erection of the small cottage in which Anderson Stuart started his enormous task. There is no need to recall the part played by Douglass, Nicholson, Macfarlane and others in fighting for the establishment of the School. It appears that a Dean of the Faculty of Medicine was actually appointed in 1859, although the person chosen protested that the Senate had elected him to this position without his knowledge and against his will. The foundation of the Prince Alfred Hospital in 1873 gave those who had this matter at heart, an opportunity to press their claims to a successful issue. In 1879 Sir William Montagu Manning, Chancellor of the University, announced that the Senate was prepared to find a site for the medical school, not as was proposed within the grounds of the hospital, but actually in close association with the other university buildings. It was decided that a complete medical course should be provided. The hospital was completed in 1882 and at the same time the Senate called for applications of a Professor of Anatomy and Physiology for the new school. The University of Edinburgh nominated Thomas Anderson Stuart for the position and supported the nomination with the highest commendations. His election followed as a matter of course. In 1883 he relieved Professor Smith of the post of Dean, which the latter had held unwillingly for 24 years, notwithstanding the fact that there was no medical school in existence.

The story of the opening of the Medical School was one that always delighted Thomas Anderson Stuart's heart to recite. He lectured to his four students before the roof was on the cottage. The carpenters and masons at work listened in astonishment to the unintelligible words spoken by the young professor. He contented himself with one single day's lectures until the building was complete and then set to work in earnest. Very soon difficulties crowded into his life. As his class grew, the accommodation provided proved quite inadequate. At first he added three rooms to the cottage and then he absorbed two rooms which were willingly vacated by Professor Stephens, who was not enamoured of the odoriferous accompaniments of the dissecting-room and physiological laboratory. In the early days he invited his old Edinburgh attendant to journey to Sydney to take up similar duties in the new School. Dr. (now Sir Alexander) McCormick also came from Professor Rutherford's department to Sydney and became a demonstrator under Stuart. At a later date Dr. McCormick was appointed Lecturer in Surgery and Dr. (now Sir Almroth) Wright succeeded him as Demonstrator of Physiology When the latter was appointed Professor of Pathology at the Royal Army

Medical College at Netley, Dr. Charles J. Martin was appointed in his stead. It will be realized that Stuart was exceedingly fortunate in having had the opportunity of association with three men of great brilliance. All this time the medical school was cramped and limited on account of the entirely unsuitable building. Thomas Anderson Stuart's ambitions impelled him to watch for an opportunity to create an environment in which a modern school could develope. He soon became convinced of the inevitable growth of the school and determined to make provision for the distant future. He conceived that if a building could be devised on a large scale, it would be possible to lay the foundations and to erect a portion at a time. There was great opposition, but this only made him the more determined to go through with his project. Dr. J. T. Wilson was appointed Demonstrator of Anatomy in 1887 and the need for expansion became even more urgent Plans were drawn up for a superb edifice. The architects were instructed to harmonize the new building with the stately Gothic architecture of the main University building. Its long, perpendicular stone lines were to be fashioned so that the connoisseur would demand the completion of an immense building in the course of time. Thomas Anderson Stuart accepted the ridicule and criticism of the majority when the foundations were laid and the superstructure gradually arose. He fought for the necessary money and won as he won nearly all his fights. No less than £80,000 were expended on the first instalment. Parliament opposed the vote of so large a sum, but gave way under the pressure exercised by those who had faith in the genius of the man. In 1889 the new medical school was opened and sixty-six students followed their leader into the magnificent laboratories and theatres. About the same time the second chair in the Faculty was established and Dr. J. T. Wilson was appointed Professor of Anatomy, to the immense advantage of medical education in the Commonwealth. Thomas Anderson Stuart had gradually evolved a curriculum suited to the time and to the then existing strength of the teaching staff. He recognized that the course could be modified without great difficulty, as the march of science and the expansion of the school revealed the necessity. His ideas and aims could not materialize in the absence of ample housing accommodation. A few years sufficed to justify his demands. Those who had laughed at his supposedly grandiose ideas, were soon compelled to admit that Stuart had been wise beyond his generation and had performed an immensely valuable service to Australia, by creating a medical school which ranks among the best in the world. The vast building, which has cost over £120,000, is already overcrowded and insufficient for the ever-growing needs of medical education. Too often it is stated that this service has been chiefly to the State of New South Wales. The Medical School of the University of Sydney exists to-day in friendly rivalry with the sister institution in the University of Melbourne and these two great bodies are responsible for the standard of excellence of medical education in Australia. The time is rapidly approaching when the Adelaide School will expand to dimensions comparable to those of the two leading schools. Australia owes it to Thomas Anderson Stuart that this standard of excellence of medical education in the Commonwealth ranks to-day with that of the great teaching centres of the old world.

During the time of struggle and opposition, Thomas Anderson Stuart found energy to spare to further the welfare of the people of his adopted country. The Government of New South Wales sought his aid and in 1892 elected him President of the Board of Health and Medical Adviser to the Government. While acting in these capacities he endeavoured to introduce order in the hygienic home. He was responsible for many ideas which were embodied in the health legislation during his period of office, He proved himself a health officer of great strength and determination, brooking little opposition and seeing far into the future. He was swayed solely by a desire to achieve success in his undertakings. He saw clearly how far public health activities in those days could influence the health of the masses and he laid his plans so that as knowledge accumulated preventive measures could be applied without delay or irritating opposition. From the first he was keenly interested in the Royal Society of New South Wales and a few years after his arrival in the colony he was asked to accept the position of Chairman of the Medical Section. The success of the meetings of this section was admittedly due to the energy and initiative of Anderson Stuart. In 1890 he resigned this position, to the regret of the members of the section. In 1888 he was approached by the Board of the Children's Hospital and in due course he was appointed Honorary Physician. As far as we are aware, this was the sole opportunity he seized of practising as a physician. His colleagues regarded his association with the hospital as a valuable asset to the institution and when he offered to resign in 1891, it was put to him that they were of opinion this would be a calamity. Later he succeeded in obtaining for this institution a new site. It is now standing in Camperdown, on an ample and well-placed area of ground, under the name of the Royal Alexandra Hospital for Children.

In the year 1890 he visited Europe and during his absence Professor Wilson carried out the duties of Dean. This visit offered an opportunity for two important undertakings, both of which brought credit to Stuart and benefit to Australia. He was commissioned by the New South Wales Government, the Government of South Australia and the Government of New Zealand to make inquiries and report on "Dr. Koch's method of curing consumption." His report was published on April 6, 1891, on his return to Australia. It is a highly interesting document, obviously compiled by a man whose vision was wide and who was not blinded by the misleading over-enthusiasm attaching to novelty nor by the equally misleading pessimism born of reaction. He recognized that the use of tuberculin was associated with danger. He saw that it should not be employed in advanced cases of pulmonary tuberculosis, but he expressed hope that continued trial and experiment would prove it to be a therapeutic measure of great value. He found, even in those early days, that tuberculin treatment represented a distinct advance. The report is all the more valuable because it was issued at a time when the majority of clinicians were prepared to discard tuberculin as useless. Stuart sought first hand evidence from Robert Koch and from others who were competent to express an opinion. He recognized the difference between the unskilled application of a potent remedy and the cautious exhibition of a specific in selected cases.

While in England his attention was attracted to the discussion that was taking place among the members of the Royal Society and of the British Association for the Advancement of Science on the theory elaborated by Darwin in connexion with the structure of coral reefs. Darwin's theory was based on the observation that coral polypi flourish in clear water at a temperature of about 20° C.. He supposed that corals were deposited on firm formations in clear water not far from the surface. When the foundation sank, the successive generations of coral were deposited on the upper surface of the former formation, in order to obtain an unchanged water temperature. The continued sinking of the substructure and building up of the coral led to the formation of a reef on the edge of the sinking island. Little by little the coral separated from the original foundation, thus giving rise to the so-called barrier reef. Should the island disappear altogether, the reef would remain in the form known as atoll. The correctness of this theory had been challenged by Murray, Dana, Semper and others. Stuart was appointed a member of a very strong committee to deal with the arrangements for an expedition to Fanafuti, in the Ellice Islands, to investigate the formation of the atolls. Although the subject was scarcely within the range of his special activity, he agreed most readily to take an active part in providing facilities for the geologists and zoologists who were to carry out the work. On his return he induced the New South Wales Government to supply apparatus for drilling and other equipment through the Mines Department and in many other ways helped the projected expedition. It has been said that the expedition was based on a tripod: the originators, the British Association; the British Navy, who placed a warship at its disposal; and Anderson Stuart, who collected the equipment and provided facilities. It is unnecessary to follow the work of the expedition or to deal with the report in this place. Suffice it to say that, while Professor Sollas and Mr. Charles Hedley were not prepared to accept the evidence collected as proof of Darwin's theory, Professor David held another view. The report was non-committal, but Thomas Anderson Stuart was convinced that Darwin's views had been established as facts.

Of Stuart's activities in connexion with the Prince Alfred Hospital, afterwards called "Royal," much could be written. He was appointed a member of the Board on his arival in the colony in 1883 and retained this office until his death—a period of 37 years. The institution found a very warm place in his heart. Next to his medical school, it claimed his chief energies and he exercised all the brilliancy of his ingenuity in furthering its objects. From the first he determined that it should rank as a pattern hospital of the world. He worked assiduously and fearlessly for expansion and for the appointment of a medical staff competent to carry out the duties of the greatest clinical teaching school in the southern hemisphere. In 1890 Professor J. T. Wilson resigned the position of Honorary Secretary. Stuart was appointed in his stead, but a few months later Sir Edward Knox, the Chairman of the Board, died and Stuart was transferred to this position, while the post of Secretary was handed to Mr. W. Epps. As Chairman he seized the opportunity of giving his influence free play. He fought hard and often for the principles which he conceived to be sound. Time and experience justified his actions in almost every instance. It was to his demand that the Queen Victoria Memorial Pavilions were erected, at a cost of £80,000. He was the moving spirit in the raising of £15,000 for the Queen Victoria Memorial Fund. He conceived the ideas which led to the institution of the pathological department, of the nurses' home as it now exists and of many of the special departments of the hospital. He extended and expanded the hospital to meet the needs of the sick poor and of the clincal teaching school. He took note of all shortcomings as they revealed themselves in the course of time. He recognized that it would be waste of time for him to concern himself with the direction of details, but he busied himself with large principles and kept an eagle eye on the working of the machine which owed so much to his foresight and organization.

The medical profession does not stand alone in indebtedness to Thomas Anderson Stuart. Holding the view that dentistry was an important adjunct of medicine, he set himself the task of creating a Dental School in the University and again succeeded. A school was not likely to satisfy the requirements of training without a suitable place for practical training. He therefore added to his scheme the foundation of the Dental Hospital and soon overcame the difficulties. The Dental Hospital stands to-day as one of the monuments of a manifold activity.

During the visit of Admiral Fanshaw, the Commander-in-Chief of the Royal Navy, Anderson Stuart worked indefatigably for the inauguration of an organized medical service in the Royal Navy in Australian waters. Through his offices the Australasian Branch of the Auxiliary Royal Naval Sick Berth Reserve was instituted. He carried out the arrangements for fitting up a hospital ship at Sydney for use in time of war. He drew up a scheme for a roster of medical practitioners in Australia willing to serve in the Royal Navy in time of war. He also persuaded the Board of Directors of the Royal Prince Alfred Hospital to appoint all Royal Naval Medical Officers honorary consulting surgeons to the hospital. For these signal services he received the thanks and appreciation of the Lords Commissioners of the Admiralty in 1906.

In the early years of the present century a proposal took practical shape for the institution of a Federal control of persons practising massage. A society was formed and in 1906 the New South Wales branch was born. Thomas Anderson Stuart was asked to become its first President and he consented. He accepted this and many other positions as soon as he was convinced of the utility of the work to be undertaken. He refused to serve unless there was something important to do. He held no positions as sinecures. In connexion with the Massage Association he gave much thought and time to the adoption of the curriculum which had been submitted from Melbourne. Dr. J. W. Springthorpe pressed for his election as Federal President of the Australian Massage Association for the year 1907. His election took place at the annual meeting in Sydney.

During the long years of ardent work for medical education and communal well-being, Thomas Anderson Stuart scarcely interested himself in the vicissitudes of general or special medical practice. He was deeply interested in creating an Australian medical profession, in fashioning institutions for the promotion of public health and in wielding a beneficent influence on the life of the Australian. But he found no channels for useful expenditure of energy or for the exercise of his limitless ingenuity in the field of medical practice. As a result, the medical profession met with a somewhat cold response when the problems affecting the internal interests of the profession were brought to his notice. This apparent lack of interest led many of the members of the medical profession to regard him as standing outside the profession. When the Australasian Medical Congress met in Melbourne in 1889, he was not chosen to fill one of the ornamental posts of honour, but was elected President of the Section of Anatomy and Physiology. His address was a measured, dignified and scholarly dissertation on the scientific culture and adequate training for practitioners of medicine. In the course of this address he outlined the changes in the curriculum introduced a few months before the time of the meeting. Five years later he delivered another learned address, on vacating the office of President of the Royal Society of New South Wales. He dealt with a variety of subjects and devoted sufficient time and attention to each to whet the appetite of his audience for more. He was elected President of the same Society in 1906 and at the end of his year he dealt in his usual lucid and fluent style with the subject of tropical disease, as an introduction to the establishment of the Institute of Tropical Medicine, to which reference will be made presently.

Between the years 1892 and 1896 Thomas Anderson Stuart, as President of the Board of Health of New South Wales, recognized the necessity of a proper scientific control of prophylactic endeavour. He persuaded the Government to purchase a plot of land in Macquarie Street and, together with the Government Architect, he designed the laboratories and accommodation for the Board of Health. These laboratories were destined at a later date to become the Bureau of Microbiology. He interested himself in many other problems of sociological hygiene. Among these may be mentioned the New South Wales Civil Ambulance and Transport Brigade, of which he was President for close on twenty years. He attended practically every meeting of the Board and insisted on being consulted whenever any matter involving a modification or change of policy was under consideration. He did not interfere with the administrative details; life was too full of more important things. But he was the very soul of this benevolent institution. Similarly, he was intimately associated with the Industrial Institute for the Blind and followed its development closely and with keen anticipation. He knew what he wanted and what was good for the institute and he insisted on obtaining it. He was an active Trustee of the Victoria Park and worked earnestly for its proper and suitable adornment. To him the provision of adequate places of recreation for the people was a necessity. He valued natural beauty and was prepared to help others to enjoy the pleasures of peaceful and picturesque surroundings. His association with the Zoological Society was more transient. It is probable that his interest was directed more to the provision of an instructive pastime for visitors than to a congenial scheme of harbouring the inhabitants of the "Zoo." For one year he was President of this Society and during his term of office he displayed his characteristic energy and dominance. As Trustee of the Australian Museum he was content to take a relatively subsidiary rôle. As President of the British Immigration League of Australia he worked hard and long for a strictly British immigration. He wished to see the bulk of the surplus population of the United Kingdom diverted to Australia, so that the race might remain British and the increase of population might be rapid. He lent his influence and energies to several Imperial undertakings, to which he could not devote himself directly. For example, he collected funds for two antarctic expeditions and he infused enthusiasm into the Indian Famine Fund, with the result that upwards of £20,000 were raised in New South Wales alone. For a time he was a member of the New South Wales Medical Board. He soon discovered that his time was being taken up to a great extent in examining certificates and attending to details of a kind that was uninteresting to him. He therefore withdrew from this body. There were many other institutions to which he was attached. The majority secured his whole-hearted co-operation and sympathy and it may truly be said that when Thomas Anderson Stuart's assist-

ance was invoked success was guaranteed. He delivered the first lectures for the Civil Ambulance Brigade and did not subsequently allow his interest in the teaching of first-aid and general hygiene to flag.

At the time of his association with the Australian Museum, Thomas Anderson Stuart directed the attention of the curator and other officials to the need for more accurate information concerning the mosquitoes, flies and other insects of Australia, in particular relation to their functions as vectors of disease. He then planned the establishment of a department of tropical medicine in the Medical School of the University of Sydney. He held that Sydney provided facilities which were superior to those available at any other city or town in Australia. There was Port Jackson, with its large shipping traffic. The fact that the port of first call from the Pacific islands and from New Guinea was Sydney led to the admission of many persons suffering from tropical diseases. The Medical School was well equipped as far as laboratories were concerned. Finally, Sydney was favourably situated for the purpose of dispatching expeditions to tropical Queensland, New Guinea or the Pacific islands. In 1906 Bishop Frodsham discussed the question with Thomas Anderson Stuart. The Bishop had approached Professor Sir Harry Allen and Professor Sir Edward Charles Stirling on the subject of the establishment of an Institute of Tropical Medicine in the chief town of North Queensland, Townsville, and had gained their support. Stuart was unconvinced in regard to the claims put forward in favour of the Bishop's scheme, but, after full discussion, he accepted the alternative proposal and threw himself heart and soul into the work. A committee was formed, consisting of Thomas Anderson Stuart, Professor Sir Harry Allen, Edward Charles Stirling, Dr. Wilton W. Love, Mr. Atlee Hunt. Dr. W. P. Norris and Dr. J. S. C. Elkington. The Federal Government undertook to contribute £4,000 a year to the maintenance of the Institute and the Queensland Government added an annual sum of £250. Initial donations from the Universities of Sydney, Melbourne and Adelaide, from the Tropical Research Fund of the Colonial Office and from Mr. W. K. D'Arcy were forthcoming. The buildings were erected in Townsville. Dr. Anton Breinl was selected to be Director, while Dr. H. Priestley, Dr. W. Nicoll, Dr. W. J. Young and Mr. Frank H. Taylor were appointed to the staff. The work began in 1911, but the official opening took place in June, 1913. Thomas Anderson Stuart was the only member of the committee to attend the official opening. From his Presidential Address to the Royal Society of New South Wales (1907) it is gathered that Stuart held the opinion that one of the most important functions of the Institute would be the scientific investigation of the questions involved in the occupation and development of tropical Australia by the white man. The resolution of the Australasian Medical Congress in 1911, that a discussion should be held on the permanent settlement of a working white race in tropical Australia at the 1917 congress, fitted in exactly with his particular views. The 1917 Congress was postponed on account of the war. It will be held this year and the man who set such store on the scientific solution of this question, will not be present to ascertain the result. Stuart was intensely disappointed that the further function of the tropical institutions of his dreams remained unfulfilled. He wished to see the Australian student trained in tropical medicine, to the advantage of the Commonwealth and of the world and to the credit of those concerned in the establishment of the school. Townsville was too far distant from centres of population to be used at all freely as a training school.

Honours were showered on Thomas Anderson Stuart and they were all richly deserved. In 1900 his old University of Edinburgh conferred on him the honorary degree of Doctor of Laws; two years later he received the honorary degree of Doctor of Science of the University of Durham and the honorary Fellowship of the Royal Academy of Medicine of Ireland. In June, 1914, his name appeared among the birthday honours with a knighthood. He was elected a member of very many learned societies, in recognition of his varied attainments in the world of science, of his enormous achievement in building up one of the first medical schools of the world and of his unexampled success as a teacher of physiology. He was chosen as one of the corresponding editors of the *Journal of Physiology*, which is published at the Cambridge University.

His contributions to medical literature are numerous and some of them are of considerable scientific importance. In the *Proceedings of the Royal Society*, London, he published descriptions of his method of demonstrating how the form of the thorax is partly determined by gravitation, of a lining membrane of the *fossa patellaris* of the *corpus vitreum* and of the connexion between the suspensory ligament of the crystalline lens and the lens capsule. He also described the method of closure of the larynx. Some of his articles, appearing elsewhere, dealt with methods employed by him in teaching physiological subjects. As a writer he was gifted with an easy style and with the power to convey his meaning in a few words. He was powerful in controversy and convincing in argument. He possessed an unusual ability of grasping a situation from a few indicative details. He was intolerant of mental sluggishness in others, because his own mind was ever alert. He exercised an immense influence over his students, an almost hypnotic influence. His art in teaching was based on a careful study. His personality, his excellent voice and his command of simple, yet convincing, language gave him a great advantage over the ordinary lecturer. He knew the power of dramatic effect and used it to hold his students in wrapt attention. He rarely departed from logical sequence or firmly established facts. Like all good teachers, he used repetition for the purpose of impressing facts on his audience. Diagrams were freely used, because the student could study the details more efficiently than when the same pictures were displayed for short periods on the lantern screen. He liked to teach from models and displayed great mechanical skill in designing them in such a way that their chief features could be grasped at a glance. There are many cases filled with these models at the University. Many of them exhibit the mechanical result of structures met with in the human or animal organism. They deserve a place in a permanent museum devoted to the exposition of function. A few have been widely adopted for the education of medical students in all parts of the world and are known to every teacher of physiology.

The latter years of his life were marked by an obvious enjoyment of the realization of achievements and endeavours and by a renewed determination to add to his extraordinary record. Throughout the period of the war he met the unexpected changes rendered necessary by the military situation with equanimity. He was ready to face any emergency and to accept any trust or obligation. He knew his power of directing men and of performing seemingly impossible tasks and he offered a helping hand to those in authority when it seemed to him that his aid was needed. He possessed a considerable quality of quiet humour and his ability to detect human weaknesses and frailties lent a peculiar charm to his society. He was at once immensely popular and greatly hated. He remained indifferent to the opinion of his enemies when he set his purpose to achieve an object. His motives were frequently misunderstood, because he did not take the trouble to explain what he thought should have been apparent to everyone. He was delightful as a companion, staunch as a friend. His ambition was to be great and it was gratified at an early age. His influence for good cannot be measured to-day nor to-morrow. It will gradually become apparent in the great monuments which he erected during the course of his strangely full life and the generation to follow will realize perhaps better than can his contemporaries how far-reaching was that influence. A magnificent portrait of the handsome man, painted by Longstaff, adorns the National Gallery in Sydney and will awaken wonder and admiration in times to come when new faces are seen and new voices heard in the spacious halls of the beautiful edifice that Thomas Anderson Stuart gave to Australia.

Professor A. E. Mills writes:—

Although I had known for many days that I might expect to hear of the death of Sir Thomas Anderson Stuart, when the sad news reached me that he had passed away, the blow fell with unexpected force. I could not, had I wished to do so, get the event out of my mind. I reflected on our long association, on our intimate and unbroken friendship for

more than 30 years. I dwelt on the many incidents in which he played so great a part. My thoughts lingered on those personal matters in which I was influenced and guided by my old friend and teacher. Memories of little and big things that seemed to draw us closer together, or to mar our friendship temporarily, came crowding in on me; and although I realized I had lost an old friend, an old teacher and a kindly councellor, I felt proud that he had counted me as one of his intimate friends.

Thirty-four years ago I first listened to Sir Anderson Stuart's lectures. At that time, as Professor of Anatomy and Physiology, he lectured on both these subjects. He seemed equally at home, equally enthusiastic in each. Straightway he aroused our interest and gripped our attention. He was so clear in his description, so clear in his choice of words, so orderly and so thorough in the treatment of his subject, that we, his students, very soon realized what a great teacher we possessed. We felt that we had a proprietary right to him and we were ready at all times to defend his title to "The best lecturer in the University." He certainly was one of the most lucid, one of the most interesting and one of the greatest teachers I have ever known.

But after all it is not only as a great teacher that he is entitled to our esteem. His teaching was only a small part of the rôle he played within the University and the State. His voice was heard and his influence was felt far beyond the lecture hall. He was Dean of the Faculty of Medicine and as such was a member of the Senate. As Dean of the Faculty and as a Senator he was in a position to prepare the soil and to sow the seed that has produced such good fruit. As Dean of the Faculty of Medicine—that is as head of the Medical School—he showed wonderful gifts of organization and a foresight that in these later days we must look on as truly prophetic. His was the larger vision that is possessed by men of great imagination. When we reflect that at a time when the Sydney University Medical School was small and insignificant and when its students numbered little more than a score, he was planning and preparing and organizing for the great school that he foresaw it was destined to become—and that we know to-day—we can realize his marvellous prescience. But that was not all; others could not see what to him was clear and distinct, nor did they hearken to his prophecies. To convert those of lesser faith, to overcome the opposition of those who could not see eye to eye with him, and to bring into reality his visions, required unbounded faith and enthusiasm in the righteousness of his cause, unswerving adhesion to it and imdomitable energy and unfailing effort. Professor Anderson Stuart, possessed of these qualities, triumphed where others of lesser parts would have failed. Let those of us who take just pride in being medical graduates of the Sydney University, give thanks that from almost the beginning of the Medical School Professor Anderson Stuart was the head. He was the founder and in great part the builder; right well he laid the foundations and he built well. Once he told us that from boyhood upwards he was given to building castles in the air. One of us reminded him that of the many he thus built with no sure foundation, one remained—the Sydney University Medical School— that would endure and be a monument to him for all time.

As it was with his work at the University, so was it with his work in other fields. Whatever the work he brought to it a whole-souled enthusiasm. He concentrated all his attention on it. So he laboured in the interests of the Royal Prince Alfred Hospital for the past twenty years as Chairman of the Board of Directors. During that time he guided its destinies and we see it to-day one of the largest and best-equipped hospitals in Australia.

What his loss will mean to the Hospital and to the Medical School cannot now be foretold. Certainly to us who have been so long associated with him, the School will never be the same. Still let us be glad that to him was given the time to accomplish so much. And he was satisfied, for thus he expressed himself to me only a few weeks ago: "It is given to few men to see the completion of their life's work. That has been my privilege and my joy and my life has been a very full one." So, indeed, it was—full of hope, full of enthusiasm, full of faith, full of work.

Dr. Cecil Purser writes:—

I have had the pleasure of a close intimacy with the late Sir Thomas Anderson Stuart since my entrance as a medical student in 1886. His marked personality impressed us all as students. His thoroughness, enthusiasm and intense interest in his students were dominant features. He was a lecturer of lecturers. Each lecture was just exactly what was needed, no packing or extras, delivery incisive and clear, and he never failed to make everything easily understood.

The organization and energy and foresight which have always been marked characteristics throughout his life, came to the fore when he started the project of having the Medical School built. Our year was the first fifth year to be lectured to in the new building. We graduated, nine, in 1890, and as we sat in the front row of one of the large lecture rooms and viewed all the empty benches, we thought the Dean was crazy to imagine those seats would ever be filled in his time. But he lived to see those lecture rooms far too small.

He had the keenest perception in selecting exceptional confrères as co-workers and assistants at the Medical School, and such selection has largely assisted to build up a strong and capable Medical School.

As a co-director of the Royal Prince Alfred Hospital for many years, I noted his indomitable energy. He never flagged, but always kept the whole of the Hospital work in his mind's eye and he always strove to make it a leading hospital of the State.

As a Fellow of the University Senate he was practically always at his post and, while ever keeping the welfare of the Medical School in the foreground, he always took a keen and general interest in the welfare and advancement of the University as a whole.

As a past President and member of the Board of Health, he has left a good impress on that Department. His opinions were always valued; he had the happy knack of quickly discerning a want and suggesting a beneficial remedy.

It has been said by candidates who failed in their examinations that "Andy" prevented their passing, but, as one who has been present for many years at the meeting of examiners for final degree examinations, I can assure them that such was never the case. He always erred on the side of leniency, and never wished to see any student go down; over and over again, he has fought on behalf of a student passing.

I think it is fitting even now, with regard to his life work, to quote from a song which appeared in the first yearly song book of Sydney University Undergraduates' Association in 1889. The song was named "The Little Idee" and had reference to the present Medical School, which was, at that time, nearing completion.

"Sing loudly to Anderson's praises,
For he's worked out his little idee."

Dr. C. MacLaurin writes:—

As one who has known the late Sir Thomas Anderson Stuart for the best part of thirty years, and has had unusual opportunities of forming a judgement upon him, I have been asked to write a few words on his life and character. I can do no more than a sketch.

I first became intimate with Sir Thomas when my father put me in his charge to go to Edinburgh in the year 1891. It was owing to him that I, a boy of eighteen, worked, and worked really hard, on board ship, because I had to pass an examination immediately on arrival. I can safely say that, only for Stuart's inspiration, I would probably not have worked hard enough to do it. We spent a few days at Dumfries, where he inspired me with that love and interest for the beauty and romance of Scotland and Scottish history, which, indeed, I had first learnt from my father, but which he now, as it were, put in concrete form. I met there his father and mother, the former very old, and, to my mind, colourless, but the latter a woman of amazing vitality and energy. She was not unlike him in features, and I felt sure—and he confirmed me in the thought—that it was from her that he had inherited that vigour and domination which even then were so well marked in him.

One cannot help unconsciously comparing and contrasting the two great men whom the University of Sydney was

so fortunate as to possess during the past critical generation. In many ways each was the complement of the other. They resembled each other in that each was a man of enormous industry and indomitable courage, of wide learning and intellectual interests. But in some ways they were as different as possible; and possibly it was for that reason that the long alliance between Sir Normand and Stuart was for so many years irresistible in University affairs. When Sir Normand was faced with a difficulty, his first thought was: "Is there no way round?" Stuart used rather to try a frontal attack, to see if he could not win by sheer courage and power of will. And thus it was that he made life, I fear, harder for him than it need have been. The relations between him and my father were really, I often thought, almost those of father and son. Stuart used to defer to Sir Normand's judgement and to the last showed him the greatest reverence; his death in 1914 was a great blow to him, from which, in some respects, he never recovered. The loneliness of advancing years came upon him and he never troubled to make more friends.

Was he an intellectual man? Concerning that I could never quite satisfy myself. He had a vast collection of curious and beautiful objects of art; but I do not think they roused in him the feelings which would naturally occur to a man of wide intellectual interests. I remember a magnificent bust of the young Augustus, which stood in his entrance hall; I often admired it to him. My father would have been prepared with a lecture on the great emperor and his influence on history and intimate disquisitions on his life and character and the beauty of the work; but Stuart would never say more than that it was a fine bust and that Augustus was a great man. I fancy that, to him, Augustus, with his subtlety, his astounding courage, his skill in moulding other men to his views, was simply a model whom he had taken to mould his own life upon. Stuart would never discuss abstract questions. His hard practical mind seemed fettered by their vagueness. Even matters of history seemed soon to lose their interest for him. I do not remember one serious discussion on historical subjects into which we ever drifted.

He was determined to get his own way at any cost, whenever he was once convinced that it was the right thing for the University or the School. I honestly believe that he was only swayed by this one consideration. I do not believe that any thought of personal advantage to himself ever had the faintest influence upon him in any public matter. It is true that he made many enemies by the fury with which he always fought. These enemies were generally men who were not acquainted with the whole facts upon which he had to base his actions; when they came to know the facts, they realized that Stuart had always acted honestly to the best of his judgement. Yet sometimes the rancour remained. Reason could not always triumph over injured feelings and wounded self-esteem.

It would be foolish to deny that he had his faults; each of us has. And it was his misfortune that his faults seemed to rub many people up the wrong way. It never mattered to him in the slightest degree whether he made enemies or not. He was conscious of his own rectitude of purpose and nothing else mattered. One might truly say that he was a single-minded man, who was his own hardest critic. But he was enormously pleased, gratified beyond measure, when, at the end of a life struggle and contest, though he found himself, after a hopeless operation, looking into the very jaws of the grave, yet public sympathy and almost veneration went out to him, as it does to few men in their own lifetime. All the old rancours and hostilities seemed to die away in the last few months; nothing came to him but evidences of his fellow-citizens' respect and affection.

He was a remarkable man. We have had no one like him before and we shall have no one like him again. His influence on the youth of the country has been overwhelming and he can never be forgotten.

Dr. J. L. Beeston writes:—

Stuart had a side to his character which did not appear to everyone. He had, behind his reserve, a very lovable and likeable disposition. I got to know this side of him about ten years ago. We joined up on a trip to Tasmania and were together for about three weeks.

He had any amount of fun and enjoyed many little incidents that one would have thought much beneath a man of his intellect. With all this he had the faculty of imparting information on any topic and yet he always gave one the impression that he was out for knowledge.

He stayed a day with me some years ago and I showed him how to cross-fertilize flowers. I was amazed at the interest he showed.

Anderson Stuart was a man in a lifetime, had a most marvellous record and not the least was the way he stood up to it until the end.

University Intelligence.

THE UNIVERSITY OF SYDNEY.

As a mark of respect to the memory of Sir Thomas Anderson Stuart, the Senate of the University of Sydney adjourned its meeting on March 1, 1920, to March 8, 1920, after having passed the following resolution:—

> The Senate desires to place on record an expression of the sense of the loss sustained by the University through the death of Sir Thomas Anderson Stuart, M.D., LL.D., D.Sc.. From the inception of the Medical School in 1883, a period of thirty-seven years, he rendered eminent service to the University and to the cause of medical education by his great gifts as a teacher in the Chair of Physiology, to which Anatomy was at first attached, and by his capacity for organization as Dean of the Faculty of Medicine and as a Fellow of the Senate, as a Director and President of the Royal Prince Alfred Hospital and in other public activities.
>
> That a copy of the above resolution be forwarded to Lady Anderson Stuart, with an expression of sympathy from the Fellows with her and the members of his family in the loss which they have sustained.

Correspondence.

EXCISION OF URETHRAL STRICTURE.

Sir: As numerous inquiries have been addressed to me concerning Mr. Hamilton Russell's letter in your issue of February 14, 1920, criticizing the method adopted by me for the resection of impassible strictures of the urethra, it has seemed advisable to reply in some detail to each of the points raised by him.

Mr. Russell digresses somewhat in referring to supra-pubic cystotomy when employed as a preliminary to the operation of supra-pubic prostatectomy. He infers that the sole reason for doing this in septic cases is in order to "cleanse the bladder and purify the urine." Is this not a very inadequate conception of the true state of affairs? Surely the most valuable single function of a preliminary cystotomy (or even of a retained catheter) is the relief of the back pressure on the damaged kidneys, enabling these organs to reach a state of stable equilibrium and thus practically eliminating uræmia as a post-operative risk. This is more particularly applicable in uninfected cases, when there is a large amount of residual urine of low specific gravity. This preliminary "renal decompression," whether by catheter or by cystotomy, aids very materially in the reduction of the mortality in these, perhaps the worst of all ordinary, operative risks.

In reply to Mr. Russell's statement that "when the perineal route is chosen for prostatectomy, as has been clearly shown by H. H. Young, preliminary drainage of the bladder is certainly not required," I would refer Mr. Russell to H. H. Young's article in the *Journal of the American Medical Association* of February 17, 1917, in which he records that preliminary drainage of the bladder was required in 53 out of 94 cases.

Again, Mr. Russell states that the bladder is better drained through a perineal than through a supra-pubic incision. This does not appear to be in accord with the great bulk of modern urological opinion.

Mr. Russell writes that in none of his resection cases has a supra-pubic cystotomy been done and that "it is not a

small matter to subject a patient to two operations, where one can be made to answer quite well." Later he states that he has only operated in one case of traumatic stricture and that in this case he did not think that he could have carried out the operation successfully without the aid of a supra-pubic opening, which was already present. These traumatic cases, in my experience, form a not inconsiderable proportion of those requiring resection. In Mr. Russell's reported cases (see *The Medical Journal of Australia*, March 22, 1919, page 231) one patient died "a few days after operation from uræmia" and in another "the whole of the tissues of the perineum became the seat of dense, brawny swelling and a week after the operation he had a somewhat severe hæmorrhage, which rendered it necessary to reopen the entire wound." the final result being "imperfect." Is it unreasonable to suppose that in each of these cases the accidents enumerated might have been avoided by preliminary supra-pubic cystotomy?

Mr. Russell in his letter further says: "I am quite sure Dr. Harris will find that his fears as to the evil effects of a momentary contamination of the field of operation by putrid urine, are groundless." The case quoted above does not support this view.

I am quite prepared to admit the greater brilliancy of the operation, as described by Mr. Russell, in cases where the result is successful, but the accidents recorded above should "give one furiously to think." I am firmly of the opinion that supra-pubic cystotomy lends an element of additional security which should not lightly be discarded.

Yours, etc.,

S. HARRY HARRIS.

235 Macquarie Street, Sydney,
March 3, 1920.

Medical Appointments.

During the absence of the Inspector-General in the Eastern States, Dr. J. Bentley has been appointed Acting Inspector-General of the Insane for Western Australia.

Dr. T. L. Anderson has been appointed Honorary Consultant at the Fremantle Public Hospital.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xxiii.

Croydon District Hospital, North Queensland: Medical Officer.

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges (other than the Grand United Order of Oddfellows and the Melbourne Tramways Mutual Benefit Society), Institutes, Medical Dispensaries and other Contract Practice. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Australian Natives' Association. Brisbane United Friendly Society Institute. Cloncurry Hospital.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	Contract Practice Appointments at Renmark. Contract Practice Appointments in South Australia.
WESTERN AUSTRALIA. (Hon. Sec., 6 Bank of New South Wales Chambers, St. George's Terrace, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30.-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. Newcastle Collieries—Killingworth, Seaham Nos. 1 and 2, West Wallsend. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, New Zealand.

Diary for the Month.

Mar. 16.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Commitee.
Mar. 17.—W. Aust. Branch, B.M.A..
Mar. 23.—N.S.W. Branch, B.M.A., Council.
Mar. 25.—S. Aust. Branch, B.M.A., Branch.
Mar. 25.—Q. Branch, B.M.A., Council.
Mar. 25.—N.S.W Branch, B.M.A., return of ballot papers for election of members of the Council.
Mar. 26.—N.S.W. Branch, B.M.A., Annual Meeting.
Mar. 27.—Eastern District Med. Assoc. (N.S.W.), Port Macquarie.
Mar. 31.—Vic. Branch, B.M.A., Council.
Apr. 7.—Vic. Branch, B.M.A.
Apr. 8.—Q. Branch, B.M.A., Council.
Apr. 9.—Q. Branch, B.M.A..
Apr. 9.—N.S.W. Branch, B.M.A., Clinical.
Apr. 9.—S. Aust. Branch, B.M.A., Council.
Apr. 13.—Tas. Branch, B.M.A..
Apr. 13.—N.S.W. Branch, B.M.A., Ethics Committee.

EDITORIAL NOTICES.

Manuscripts forwarded to the office of this journal cannot under any circumstances be returned.

Original articles forwarded for publication are understood to be offered to *The Medical Journal of Australia* alone, unless the contrary be stated.

All communications should be addressed to "The Editor," *The Medical Journal of Australia*, B.M.A. Building, 30-34 Elizabeth Street, Sydney. (Telephone: City 2645.)